...ool and Teacher's Dept.

The Elementary School Journal

Edited by THE FACULTY OF THE SCHOOL OF EDUCATION, THE UNIVERSITY OF CHICAGO, and published in conjunction with *The School Review and Supplementary Educational Monographs*

Volume XX OCTOBER, 1919 Number 2

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THE ELEMENTARY SCHOOL JOURNAL

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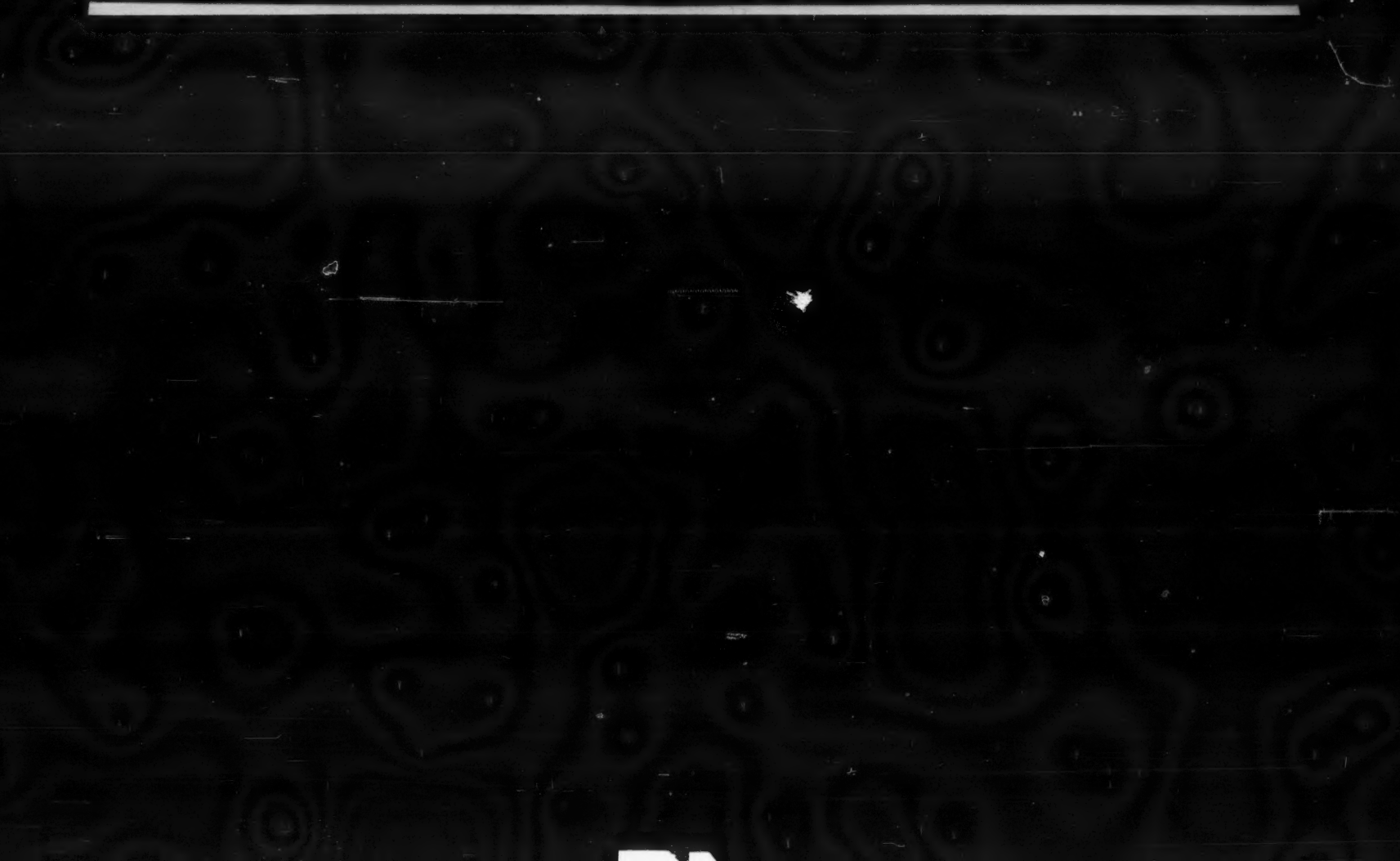

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THE ELEMENTARY SCHOOL JOURNAL

Continuing "The Elementary School Teacher"

VOLUME XX OCTOBER, 1919 NUMBER 2

Educational News and Editorial Comment

EDUCATIONAL PROGRESS IN THE SOUTHERN STATES

From three of the southern states that have been slow in their development of public education come evidences of a vigorous awakening in regard to the importance of education. The last legislature of the state of Alabama provided for a survey to be made of the educational system of that state. The report of the survey commission which was organized by the Commissioner of Education of the United States was presented directly to the legislature and will be the basis of important modifications in the Alabama system. It is reported on good authority that the probabilities are very large that the Alabama system will be organized

The *Elementary School Journal* is published monthly from September to June by the University of Chicago. It is edited and managed by the Department of Education as one of a series of educational publications. The series, including also the *School Review* and the *Supplementary Educational Monographs*, is under a joint editorial committee and covers the whole field of educational interests.

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throughout on the six-three-three plan, that compulsory education will be re-enacted in a much more vigorous form than heretofore in that state, and that larger revenues will be provided.

The governor of the state took a vigorous stand with regard to the demands made by the surveyors. Two of his recommendations are worthy of special comment, the first relating to the organization of the state department, and the second with regard to funds for the operation of the schools. His statements are as follows:

> The responsibility for the conduct of the State Department of Education should be taken from the shoulders of one man and placed upon laymen of proved ability such as compose the Alabama Education Commission. The office of State Superintendent of Education should be removed from politics and from the imputation of organized succession and ring domination. Other states have blazed the trail; the way has been charted; a state council of education for the co-ordination and direction of the work, of the three institutions of higher learning and a state board of education to have direction and oversight of the other state educational agencies are the sure means by which to avoid duplication and waste and to insure a businesslike, efficient, and progressive supervision of our educational enterprises—enterprises of the greatest magnitude, of the largest financial outlay, and of the most powerful possibilities.
>
> Along with new machinery must come more money. The budget commission and the recess committee on finance and taxation could not see their way clear in the light of the State's financial condition to provide all the funds required to meet the conservative claims for additional revenue made by the Alabama Education Commission. The sincere desire of the budget commission and the committee and their great faith in the willingness of the people through you, their agents, to respond to the needs of the new day in Alabama are reflected in the appropriation of $1,000,000 from the general fund to the public schools and in the modest increases to the parts of our school system which you are asked to make.
>
> Let me repeat, the provision of more revenue is the unalterable condition of progress in education, as well as in the other lines of improvement which I am recommending. It is my calm and deliberate judgment that the people of Alabama and of the world were never so conscious as now of the intrinsic worth of education and were never more ready to enter upon a widening career of development in field, factory, forest, and mine; that this can only come through free, universal education.

It is noteworthy also that the argument presented by the Alabama Survey Commission reflects the same estimate of education that is presented in the governor's message. The report puts before the people of Alabama at some length the arguments for an improved educational system that grow out of the economic necessi-

ties of modern life. Alabama has not developed its agriculture or its manufacturing resources as fully as it might because its school system has been deficient. For purely selfish reasons, therefore, it is desirable that the recommendations of the commission should be carried out so as to give the state a better scheme of education.

The state of Virginia has recently gone through a survey somewhat more elaborate than the survey of Alabama, and it is confidently expected that as a result of this survey a new educational code will be enacted in that state. The details of the survey are not at hand and will not be published until the report is made in full to the state officials.

The legislature of Georgia has also enacted new legislation which is progressive in type. The new legislation is especially interesting in this case because it brings to light the antiquated and entirely inefficient system of taxation which is one of the serious drawbacks in the organization of school systems in the southern states. The Atlanta *Constitution* publishes a long article reviewing the action of the Georgia legislature. The following paragraphs set forth the matter of school taxation in a very illuminating way:

> The educational legislation just written into the statutes of this state by the Georgia general assembly is so thorough and progressive and of such importance to every home in the state as to make it advisable to give full information as to its contents and value. Knowing the general interest of *Constitution* readers, I shall endeavor to analyze the various measures.
>
> The local tax bill or, as it is more generally called, the "Elders-Carswell measure," because it was introduced by Senator H. H. Elders in the senate and Representative George H. Carswell in the house—this is an amendment to the state constitution of 1877 and therefore must be ratified by the voters at the next general election before it can become a law.
>
> It is the close of a long struggle on the part of the educational forces of the state against the restriction placed on public education by the framers of the Georgia constitution. At that time Georgia was aristocratic in its conception of education and while the "fathers" of blessed memory were willing to educate their own children, they were not so sure about the wisdom of training the boys and girls of "Tom, Dick and Harry." As a consequence, while nearly all the states of the Union in their constitutions laid down the proviso that each county must tax itself before it could receive state aid, the constitution of Georgia on the contrary said you shall not be allowed to tax yourself for public schools except under circumstances of the greatest difficulty; hence it required recommendations of different grand juries and two-thirds vote even before the measure was allowable.
>
> Four large counties, Bibb, Chatham, Richmond, and Glynn, saved themselves at the time by special reservation from the educational provisions of the state

constitution. The rest of the state was left chained and only the larger cities and towns secured a measure of freedom through independent local laws. The framers of the constitution even went so far as to try to cast a slur upon the very name and styled them "common," where other states have used the term "public" schools. The new code just passed uses the phrase "common or public" to get the verbiage more in accordance with modern usage.

Through independent local laws and in spite of the constitutional restrictions, some eighty-five cities and towns and sixty-seven entire counties have secured the right to maintain schools by local taxation. The Elders-Carswell bill will not affect any of these, but merely seeks to give the rest of the state the right to use taxation instead of tuition fees—the only modern business way of maintaining schools.

This somewhat inadequate treatment of the problem of taxation represents genuine progress but leaves much to be desired even yet. Some of the other items of legislation reported in the same article are somewhat more hopeful. The following may be quoted:

The weakest point in any system of education is always in the thinly settled rural field. To overcome this and give the rural child a fair chance, laws for consolidation and transportation were passed in 1911. This legislature, however, has gone two steps further. Through a bill introduced by Senator Fermor Barrett in the senate and Representative Z. B. Rogers in the house, a direct inducement is offered to those thinly scattered rural schools to combine, and wherever they do so to the extent of at least four teachers with a four-room building, $500 annually is given them from the state treasury. If in addition they will employ at least two more teachers for the high school, they are given $500 extra.

To meet this, the state school superintendent is authorized to set aside $100,000 from public school funds, in order to foster and encourage the very best type of teaching in those sections.

A measure for the training of subnormal children was passed. The figures show that about 3 per cent of the population of every state is subnormal or mentally deficient. A large percentage of our criminal population comes from this class. Commonly, they have been left without educational training and yet it is well established that particularly through industrial work, they can be materially aided to become an asset instead of a liability to the community.

An illiteracy commission of ten was created with the governor and state school superintendent as ex-officio members. The remainder are appointed by the governor with no salaries for anyone for this work. They are given as a nucleus, the balance of the funds appropriated for the state council of defense amounting to about $12,000.

It is hoped that good citizens will aid, so that a large sum may be raised for giving training in every county in the state to those men and women who have passed beyond school age and are still unable to read and write. It is hoped, also, that through this, much may be done to lessen adult illiteracy before the census is taken next year.

A new law requires that all public school buildings must be constructed in accordance with plans provided by the state or local boards of education. This

will prevent the old shoe box structure put up in so many communities without reference to light or breathing space, and also the architectural monstrosities which stand in so many places as monuments to the ignorance of some man, or set of men, who believed a school could be a shanty.

To meet this law, the state department of education has already arranged to provide plans and blue-prints for all rural schools of from one to four rooms, and these are by the unit or latest modern type. Architects must be provided by local boards to erect buildings larger than four rooms.

SUMMER WORK FOR TEACHERS

The slight estimate which a good many people put on the professional pretentions of teachers comes to the surface from time to time in suggestions made for the compensation of members of our profession. Last winter the president of one of the leading universities of the United States brought down upon his own head a storm of protest because he said that professors ought to be appointed in colleges and universities with the explicit understanding that they would supplement their university incomes by other types of work, especially during the summer vacation. A man ought to be able, according to the statement thus given to the world, to supplement his salary in political economy by clerking in a bank during the summer, or he ought to be able to supplement his salary in the department of philosophy by preaching or engaging in some more lucrative occupation.

Now comes a similar proposal for teachers in high schools and elementary schools. It is suggested by a philanthropic group who realize the necessity of maintaining the schools of the United States, but through some form of subsidy other than drafts on the public purse. The New York *Call* reports a letter sent out by the Mayor's Committee of Women on Reconstruction and Relief of New York City. Miss Alice Carpenter, chairman of the employment committee, writes the following letter to induce teachers to take up the scheme:

There are always during the summer a number of public- and private-school-teachers who probably will be available, not as servants, but as home assistants—women who would be glad to live in, and to do housework in, homes, provided they did not lose caste by becoming servants. Many of these women have a good knowledge of cooking, and many would prove trustworthy in other directions. Such an innovation in their domestic arrangements on the part of American women would be going back to the days of our forefathers, when there was no servant class in America and the young daughters of good families went into the

homes of friends and neighbors and became loved and trusted members of the households which they entered.

If two home assistants are needed, the problem is easier because they become companions for each other. In one or two cases we know this has been successfully tried this summer. A young school-teacher from Brooklyn is cooking for a family of twelve in a lovely summer home, and is paid $35 a month. A trained nurse wishing temporarily to change her occupation is housemaid, receiving $25 a month in the same home. Both of these women eat their meals with the family and neither is considered as a servant, but as a regular member of the family. They do their work well and are paid considerably less than would be a member of the servant class. They can afford to do this because they are doing the work in their vacations and so are earning extra money.

Comment is hardly necessary on such a proposal as this. It is interesting to get, however, two or three of the human reactions which the New York *Call* adds to this statement of the letter. The following are two of these statements:

Why on earth should a teacher go and cook for a family of twelve for $35 a month, when a good cook can easily get from $60 to $80 a month in a family of four or five? As for going in pairs, that doesn't appeal to me at all. Why waste the moonlight nights in that lovely summer home strolling or canoeing with another girl? After cooking and serving dinner for fourteen, and washing, wiping, and putting away the fourteen sets of dishes and so forth, I should want some more stimulating recreation than exchanging views with the teacher-housemaid.

I really could not indorse the plan unless it were extended to the men teachers. I should want the butler to be a professor of romance languages or a political economist, who could explain to me the relation of China to the League of Nations, to refresh my mind in the evenings after my exertions in feeding the family and being one of them.

As a teacher, a worker, I do not care to scab on any other group of workers. That is what the teacher would be doing if she went to do housework for so much less money than a regular servant would get. It seems to me that if the public-school teachers are getting such poor salaries that they have to work during their summer vacations in order to make ends meet, New York City had better keep quiet about it and not spread the fact abroad.

The whole discussion belongs to an era when teaching was not a profession but a side issue. There was a time when all of the young men who intended to be lawyers taught school for a little time in order to save the money necessary to study law. It has not yet gone out of fashion for young women who are waiting for a final solution of their careers to teach school for a short period. It is hardly to be wondered at that the passing generation thinks of teaching in terms of mere transient employment. There ought

to be a vigorous campaign, not merely to increase salaries of teachers, but to persuade the public that the duties of a teacher require the type of training that has developed teaching into a profession. No one will then suggest that a meagerly paid teacher who has spent years in acquiring a professional equipment ought to spend his summer vacation cooking in somebody's kitchen, clerking, or driving somebody's motor car, for the necessary pittance to complete his livelihood. Again let us reiterate the statement, "Overemphasis on the necessity of a few dollars of income has blinded the public to the real fact which is that teaching has become a profession, at least in those quarters where it is properly carried out."

THE COST OF SCHOOLBOOKS

The following item clipped from the *Chicago Evening Post* sets forth in the style in which the public gets much of its information about schools a situation which is in reality a very serious one for the schools:

It's going to cost more to start Willie to school next month than it did last October, for—

The price of schoolbooks is going up, unless—

Well, here's the situation:

State Superintendent of Schools Blair has notified the Chicago Board of Education that the schoolbook law of 1917 still stands and that prices of books in 1917 should be continued until 1922, under the contract of the state with the publishers.

The book publishers have notified the school board that the prices of schoolbooks have been increased since July 1, 1919. As regards the contract of 1917, the publishers say that that agreement is merely "unilateral," and, therefore, void. "A one-sided contract cannot be enforced," say the publishers.

"You can just bet your last dollar that the school children of Chicago will be protected," said Edwin S. Davis, president of the school board.

"I have not looked into the matter as yet and I cannot say at this time what legal action the Chicago school board may have against the book publishers, if they insist on raising the price of schoolbooks," said Attorney William A. Bither of the school board. "I am informed the publishers say the 1917 contract, as embodied in the state law of that date, is unilateral and cannot be enforced. The matter probably will come up at the meeting of the school board next Wednesday."

In his statement from Springfield, State Superintendent Blair says the listing of 1917 stands for five years and that failure of the publishers to seek relief at the last session of the general assembly bars them from changing prices at this time.

He says the state will enforce the law and calls the attention of the county school superintendents to the fact that the only "legal" list of prices is that published by the state superintendent in 1917.

Frank F. Hummel, secretary of D. C. Heath & Co., book publishers, said the general interpretation on the part of the publishers on the 1917 Illinois book law committed the school superintendents to the use for five years of the textbooks selected under this law. He said that while manufacturing costs had increased nearly 100 per cent since 1917, his company was proposing to stick to the 1917 prices on all books adopted, but such prices did not apply to new books.

A representative of Houghton, Mifflin & Co., who declined to be quoted, said his company was preparing to increase the selling price of schoolbooks about 10 per cent and await a court ruling on the 1917 law.

O. C. Newhouse, president of the Atlas School Supply Company, a distributing house, said that, while the prices of books to the distributor had been increased about 20 per cent, his company is planning to open bookstores opposite all the Chicago high schools this year and sell direct to the students at a price lower than that of last year. He charged the bookstore keepers with profiteering.

From Ohio comes the report that the book companies have secured an official ruling that they are not bound in the fourth and fifth years of their contract to maintain the price established for the first year.

Last fall at the request of the book companies Commissioner Claxton held a conference. One of the chief topics of discussion at that time was the circle in which the makers of books were caught by virtue of the fact that they cannot raise prices in one state without affecting their prices in other states. Thus the law in one state calls for a price as low as that given to any other customer, and since the periods of adoption in different states differ, the book companies find no point at which they can break the circle.

The situation is one in which the fact must be faced that legislation has in many cases been passed in a spirit unfriendly to the book companies. There is in many quarters suspicion amounting to fixed distrust of the companies, and the laws passed in various states reflect this attitude. The sources of this distrust are not difficult to locate. The plan of merchandising schoolbooks through the elaborate system of agencies now in existence is difficult to accept as legitimate. Book men are so numerous in the various states and they congregate in such numbers and display such unbounded hospitality wherever teachers are gathered in their meetings that the uncomfortable feeling arises that book agents are supported by a system that is extravagant, to say the least. Not only so, but there are forms of book agenting which, while they fall

within the law, look uncanny. For example, it is reported on the best of authority that before the Indiana adoption last spring, a well-known company took temporarily into its agency staff, at a very high fee, an attorney who lives in the same town with a member of the state board. Furthermore, it is a well-known fact that preparation for the Indiana adoption sent its roots far back into school appointments and the politics of educational associations. These cases which are typical of many experiences in many states lead to the feeling that the system of selling schoolbooks in this country is not controlled by considerations of public good to the extent to which it should be. Consequently there come drastic and in some cases irrationally repressive laws passed in a spirit of revenge or suppression.

All this is deplorable. Schoolbooks are essential to our schools. They have been brought to a high level of mechanical perfection, and their content is improving, and is now superior to the content of schoolbooks of any other country. The book companies which have done this have a right to a fair profit. On the other hand, the public has a right to full knowledge of the transactions of these companies. If they are as public-minded as they seem, they ought at once to move in the direction of a type of public audit similar to that which establishes and maintains public confidence in national banks and insurance companies. It is not desirable that unfriendly or confiscatory laws should be passed. It is very desirable that absolutely full publicity be given to the operations of schoolbook companies. They are public service corporations of the first importance. They should be conducted as such. Their expenditures should be published in full, and then the public will know exactly what books cost and why. Publicity of the type here advocated would remove all grounds for suspicion and would cure at one stroke the attitude which is back of many of the present state textbook laws.

AMERICAN FEDERATION OF TEACHERS

The American Federation of Teachers has had a phenomenal growth during the last nine months. It had late in July more than a hundred locals, and it is the prediction of its officers that within the next fifteen months it will have five times the present number.

This organization is a branch of the American Federation of Labor, and in its organization is patterned on the labor unions of

which it becomes one through this affiliation. Its purpose is clearly stated as the protection of teachers through concerted effort to increase salaries, to compel school systems to organize teachers' councils, to reduce the size and number of classes, to simplify and improve systems of rating teachers, and to secure the enactment of the Towner bill.

There came into the hands of the writer a letter written by the national organizer to a group of teachers who were being invited to join the federation. The following paragraphs are the ones in which the purpose of the federation is clearly revealed:

> What is the situation which confronts the teachers of America? We are in some respects the most highly educated group of people in the country; we certainly perform as important work as is done; yet we receive the lowest financial returns and have the least voice in determining the conditions of our work. We are in fact subject to a form of economic oppression and intellectual repression.
>
> What is the explanation of this situation? We teachers have been individualists. We have been working in the classroom apart from the real world, in the realm of adolescence. We have been working in the classroom apart from our fellow-workers. We have not learned to work together. As a group, it can hardly be said that we have developed either a business or a collective sense. We have not learned how to help ourselves or to help one another. We have either been unorganized or organized into the form of pedagogical associations. These associations have been made up in large part of people who do not vote. Even if they did, they would not constitute a sufficient proportion of the voters in any given community to get results. Now our salaries and school laws depend upon political bodies whose membership and policies in turn depend upon the voters. Hence our present condition.
>
> What is the remedy? There is only one way out, and that is to build up a nation-wide, business, protective, and educational organization of the teachers of the country as embodied in the American Federation of Teachers affiliated with the American Federation of Labor.

The federation is a fact the importance of which cannot be overlooked. It grows out of a widespread feeling on the part of teachers that they are not getting a fair deal. It grows out of the fact also that there is no general and effective organization of teachers in this country.

Yet, while one can understand the reason for the spread of the federation, one must pause before accepting it as either a necessary or wholesome solution of the problems of professional life in the schools.

Take for example one of the cardinal principles accepted in determining eligibility to membership. The federation deliberately

excludes from membership superintendents and supervisory officers of minor grade. Just as the head barber or the boss in any working gang is excluded from the union, so the supervisor is excluded from the benefits of protection in the federation. The inevitable result is a division within the professional group charged with the responsibility of conducting schools. Such a division is not in the interests of the schools as a whole; it is in the interests of the teachers. In one city where the federation has long been firmly established, it is a well-known fact that principals do not dare give a low rating to teachers who belong to the federation. There is evidently here a disposition to make the rating system very "simple."

The federation ought, in the interest of schools, to be totally eclipsed by a truly professional organization broad enough in its membership and interests to subordinate all class efforts to a general movement in favor of efficient schools. There is very little prospect of the broadening of the federation to serve the widest educational interests of the country.

In this connection we may quote again from the letter of the national organizer, L. V. Lampson, above referred to. He is evidently aware that objections will be raised. He meets these objections. The level of argument reached in answering them makes the student of education very restless about the further doings of the federation. The quotation is as follows:

> Now there are certain objections which you will want to consider and settle to your own satisfaction before forming a union. One of these is that teachers belong to a profession and therefore should not affiliate with organized labor. Union teachers feel that they are employees and can therefore properly affiliate upon this economic basis, if upon no other, with the other employed people of the country. In view of the pitiable compensation of the teachers and their lack of voice in determining matters of educational concern, they do not belong to a calling in which the conditions of a real profession exist. It is the object of the American Federation of Teachers to bring about such a change in the conditions that affect teachers as to make teaching a career for strong men and women.
>
> Another objection is that it would be undignified for the teachers to affiliate with organized labor. Union teachers feel that taking the teachers of the country as a whole they have very little dignity to lose. No group of people have any dignity in the real sense who are unable to protect themselves. Of all people those least able to protect themselves are the teachers of the country. The facts are that we have not been accorded that respect whether measured in terms of money or public regard to which the character and value of the services which we render justly entitle us.
>
> A third possible objection is that of the strike. To union teachers, this objection has no weight whatsoever because they are cognizant of the fact that the

American Federation of Labor grants to the American Federation of Teachers a charter of complete autonomy. No labor organization can call us out on a strike, sympathetic or otherwise. The American Federation of Teachers does not endorse the strike as a means of getting results but depends upon publicity, organization, and political action. There have been no strikes among the union teachers. There have been several this year among non-union teachers.

A fourth possible objection is that the teachers are employees of the public and therefore should not affiliate with any particular group or class. Theoretically, this is a sound argument but practically it does not stand the test of facts. The American Federation of Labor is not a class labor organization. It is neither socialistic nor bolshevistic. Now the socialist would do away with the employer by constitutional means and the bolshevist would eliminate him by revolutionary measures. The American Federation of Labor, however, believes in co-operation between the employer and the employee. It is regarded as the strongest bulwark in the country against the extreme, revolutionary, and bolshevistic labor movements of Europe. Labor leaders welcome the teachers into their organization as a further steadying influence in the ranks of labor. In this connection, it should be stated that such a thing as coercion of union teachers by organized labor is utterly unknown. The fundamental principle of the American Labor Movement is the autonomy of its locals and the freedom of its members.

The case could not be more clearly stated than in the first sentences in which Mr. Lampson comments on what he calls the fourth objection. It is indubitably true that if teachers align themselves with any class in the community, they lose their professional position and curtail their ability to teach children in a broad impartial way those democratic principles which transcend class and are the true foundations of American life.

News Items from the School of Education of the University of Chicago

TESTS AND READING SCALES

Frequent inquiries are made concerning the places at which the tests designed and standardized at the School of Education can be purchased. In order to supply this information to readers of the *Elementary School Journal* the following announcements are made:

Freeman's Chart for Diagnosing Faults in Handwriting.—This scale consists of samples arranged according to merit under each of five headings, namely, (1) uniformity of slant; (2) uniformity of alignment; (3) quality of line; (4) letter formation; (5) spacing. The scale is particularly valuable where a diagnosis for each pupil is desired. Address Houghton Mifflin Company. (Price $0.25 per copy.) Read *The Teaching of Handwriting* by F. N. Freeman, Houghton Mifflin Company. (Price $0.60.)

Gray's Reading Tests.—The oral reading tests were designed to measure the accomplishments of pupils of all grades in the mechanics of oral reading. The silent reading tests were designed as individual tests to measure the rate at which pupils read silently and their ability to reproduce and answer questions about what they have read. Address University of Chicago Bookstore, Chicago. (Price $0.10 a sample set; oral reading tests with directions and score sheets $0.65 per 100; silent reading tests with directions and score sheets $0.65 per 100. Postage or express extra. State number wanted for each grade.) These tests can also be secured from the Bureau of Educational Research, University of Illinois, Urbana. Read chapters on Reading in the survey reports for Cleveland, Grand Rapids, and St. Louis, or "Reading in the Schools of Indianapolis," *Elementary School Journal*, January and February, 1919.

Cleveland Arithmetic Tests.—These tests were originally designed for use in the Cleveland survey. They include fifteen sets of examples together with instructions to the pupil and a form for his individual scores. The series of examples is progressive in character and provides more difficult examples in each of the fundamental operations. Address Bureau of Educational Research, University of

Illinois, Urbana. (Price $0.09 a sample set; $1.90 per 100.) Read *Measuring the Work of the Public Schools* by Charles H. Judd published by the Russell Sage Foundation, New York City, and "Arithmetic Tests and Studies in the Psychology of Arithmetic," *Supplementary Educational Monographs*, Vol. I, No. 4, by G. S. Counts, The University of Chicago Press.

Rugg and Clark's Standardized Tests in First-Year Algebra.—These include fourteen tests designed to measure skill in the formal operations in algebra. The exercises have been carefully selected and standards have been obtained through wide use. Address H. O. Rugg, University of Chicago. (Price $0.12 a sample set. In quantities, $0.06 a set—a set for each pupil.) Read "Scientific Method in the Reconstruction of Ninth-Grade Mathematics," *Supplementary Educational Monographs*, Vol. II, No. 1, by H. O. Rugg and J. R. Clark, Department of Education, University of Chicago.

Standardized Practice Exercises in First-Year Algebra.—These exercises have been designed to economize time and effort in mastering the fundamental operations in algebra. Address H. O. Rugg, University of Chicago. (Price $0.12 a set—a set for each pupil.)

A Rating Scale for Judging High-School Pupils.—This scale contains a list of the most important qualities which should be found in high-school pupils. It can be used by the teacher in judging the efficiency of pupils or by a pupil in securing self-improvement through self-rating. Address H. O. Rugg, University of Chicago. (Price $0.10 a sample copy. In quantities up to 200, $0.05 each. Arrangements can be made to secure larger numbers of tests at lower rates.)

A Rating Scale for Judging Teachers in Service.—This scale contains a list of the most important qualities to be considered in judging a teacher. It can be used to advantage by supervisors or by teachers in securing self-improvement through self-rating. Address H. O. Rugg, University of Chicago. (Price $0.10 a sample copy. In quantities up to 200, $0.05 each; larger numbers at lower rates.)

The Freeman–Rugg Group Intelligence Tests.—These tests were designed to measure the general intelligence of junior and senior high-school pupils. Address H. O. Rugg, University of Chicago. (Price $0.05 a sample set. In quantities, $0.03 each.)

The Whitford Art Tests.—These tests were designed to measure art appreciation and drawing skill of grade and high-school pupils. Address the Prang Company, Chicago. Read "Empirical Study of Pupil-Ability in Public-School Art Courses" by W. G. Whitford, *Elementary School Journal*, September and October, 1919.

EMPIRICAL STUDY OF PUPIL-ABILITY IN PUBLIC-SCHOOL ART COURSES—PART II

W. G. WHITFORD
School of Education, University of Chicago

In the first part of this report an account was given of the method employed in securing results and of the scale on which the drawings were scored. We turn now to the more complete scoring and comparison of results.

As the work of the drawing test had been evaluated more conveniently upon the basis of a ten-division scale with the scores ranging from 0 to 100, it became necessary for purposes of comparison between the two tests to translate the fourteen-point scale of the appreciation test into a ten-point scale also ranging from 0 to 100 instead of 0 to 14.[1]

In the appreciation test 7 1/7 points were deducted from 100 for each incorrect choice. The resulting figure indicates the score or mark of the pupil. The following ten groupings of marks were used for indicating attainment in the appreciation test and for designating the divisions of the rating scale: (1) 90–100, (2) 80–89, (3) 70–79, (4) 60–69, (5) 50–59, (6) 40–49, (7) 30–39, (8) 20–29, (9) 10–19, (10) 0–9.

We therefore have the results from all the schools from both tests recorded on a scale of the same number of divisions and the same scoring standards. This permits a comparison of results of the two tests on a uniform basis which would not otherwise have been possible.

As a means of making significant comparison and of showing where ability appears in the different grades these same standards were applied to the work of pupils of all ages and to all the pupils of each school alike. In this manner a school may be classified in the relative ability of its pupils to attain a certain standard from

[1] The translation of a fourteen-point scale into a ten-point scale presents some irregularities of distribution. That is, in the distribution of scores for each grade in the appreciation test based on the ten-point scale, there is a possibility of a three-tenths variation in the 70–79, 50–59, 30–39, and 10–19 groups. This, however, was carefully considered in the scoring and while Table I and Fig. A (based upon Table I), may be criticized slightly from a technical point of view, it is believed that the results obtained from such a method offer no serious objections to the comparison of the outcomes of the two tests. This article represents a preliminary report on art tests. Approximately 1,000 pupils were included in this study. Further investigation, on a broader scale with revised tests and simpler technic of scoring, is under way.

the lowest to the highest grades. The tests were given to each grade group separately and to all pupils in a grade where possible.

Tables I and II show distribution of marks in an average type high school and the elementary school, School No. 1.

The tests were given in the University Kindergarten and while the results fell about one step behind those of the first grade, as was expected, i.e., the marks were all in the 40–49 group and below, no significance can be attached to results with pupils of this age.

TABLE I

DISTRIBUTION OF MARKS—APPRECIATION TEST

	Scores or Marks									
	1	2	3	4	5	6	7	8	9	10
	90–100	80–89	70–79	60–69	50–59	40–49	30–39	20–29	10–19	0–9
	HIGH SCHOOL									
3rd Year...	22	29	51	.....	.....	.....	.....	.....	....	....
2nd Year...	21	24	43	12	.....	.....	.....	.....	....	....
1st Year...	15	20	45	15	5	.....	.....	.....	....	....
	ELEMENTARY SCHOOL (SCHOOL NO. 1)									
7th Grade..	10	13	43	17	17	.....	.....	.....	....	....
6th Grade..	4	11	39	25	21	.....	.....	.....	....	....
5th Grade..	3	10	42	29	16	.....	.....	.....	....	....
4th Grade..	8	8	36	20	12	8	4	4	....	....
3rd Grade..	.....	4	14	29	25	14	11	3	....	....
2nd Grade..	.....	.....	9	39	30	9	9	4	....	....
1st Grade ..	.....	.....	.....	6	29	12	36	18	....	....

Fig. 2 shows in bar-graph form the percentage of accomplishment based on this system of marking throughout the grades of School No. 1 for both tests. In Grade VII the failing point was placed between divisions 4 and 5. The perpendicular line drawn between 4 and 5, therefore, indicates the division between percentage of pupils failing and passing the same test given in all the grades. As the lower grades are reached the divisions naturally fall to the failure side of the line.

TYPES OF SCHOOLS TESTED

School No. 1. (*Superior type*).—The tests were given first in the Elementary School, University of Chicago, where the teaching force, methods of instruction, and supervision are of a relatively high type, where the pupils come from educated and well-to-do

parents, and where the home and school environment may be considered as above the average.

The results of the tests, given in all grades of this school, present a fairly consistent standard of attainment from which to compare the work of other schools. See Figs. 2 and 3.

School No. 2. (*Medium type*).—The tests were then given in several elementary schools where the pupils come from the homes of the average thrifty class of the city. The result from a typical school of this class is shown in Fig. 3.

TABLE II

DISTRIBUTION OF MARKS—DRAWING TEST

	Scores or Marks									
	1	2	3	4	5	6	7	8	9	10
	90–100	80–89	70–79	60–69	50–59	40–49	30–39	20–29	10–19	0–9
	HIGH SCHOOL									
2nd Year...	20	20	40	20	.....	.....	.....	.....	....	....
1st Year...	15	25	40	15	5	.....	.....	.....	....	....
	ELEMENTARY SCHOOL (SCHOOL NO. 1)									
7th Grade..	13	17	43	17	10	.....	.....	.....	....	....
6th Grade..	4	11	21	42	22	.....	.....	.....	....	....
5th Grade..	.....	7	19	39	29	6	.....	.....	....	....
4th Grade..	.....	4	12	28	36	20	.....	.....	....	....
3rd Grade..	.....	.....	7	17	35	34	7	.....	....	....
2nd Grade..	.....	.....	.....	9	22	35	21	13	....	....
1st Grade..	.....	.....	.....	.....	12	18	29	12	....	....

School No. 3. (*Low type*).—Finally the tests were given in a school of the Ghetto district where the pupils come from the very poorest home surroundings, whose parents, both father and mother, work out by the day and where there is practically no helpful environmental influence.

The results from these three types of schools are shown in diagrammatic form in Fig. 3 to illustrate more clearly the wide variation in abilities existing in various schools, and to show the relative progress of ability throughout the grades.

Accomplishment for various grades is recorded on the vertical lines. Horizontal lines are used to indicate the percentage of pupils making a score of 70 per cent or better. It was found that the mode for the highest grades considered in plotting this diagram

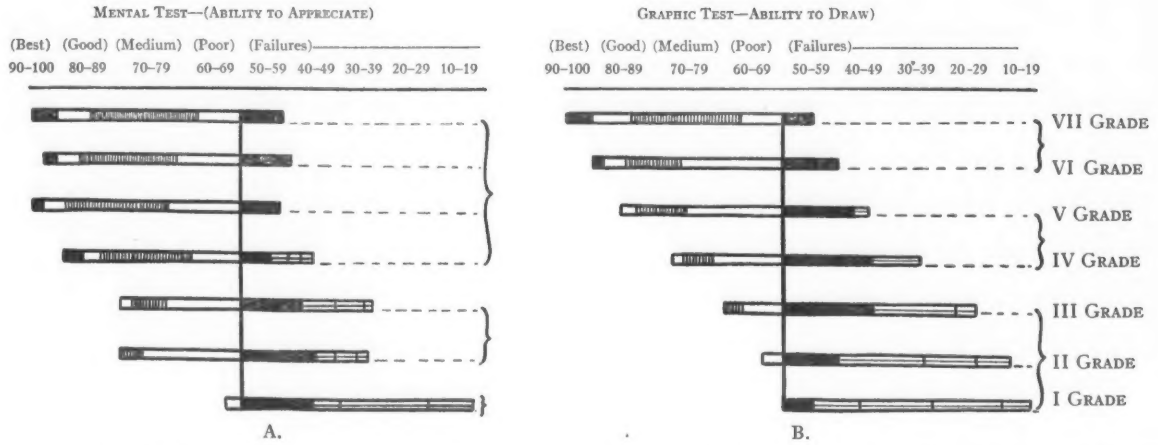

FIG. 2 A and B.—Showing the percentage of accomplishment throughout the grades of School No. 1 for mental test and graphic test.

occurred at the 70–79 group. This was verified by the result from several schools not reported by the figure. The 70–79 group, or the third decile, was taken, therefore, as a standard on which to base comparisons. The oblique lines represent the progress made from grade to grade throughout the school in attaining this standard. For example, in the fourth grade, School No. 1, 52 per cent of the pupils attained a mark of 70 or better in the appreciation test and 16 per cent of the pupils attained a mark of 70 or better in the drawing test. The heavy oblique lines show results of the appreciation test and the light oblique lines results of the drawing test. The lines are distinguished as 1, 2, and 3, indicating the schools represented.

The school of highest accomplishment automatically places itself at the top and becomes a standard for comparison and measurement of the work of other schools. It serves to indicate what may be expected in achievement by the pupils of each grade. Schools falling below the standard may be improved by careful study and application of subject-matter and methods of instruction employed in the superior school.

It will be observed by a study of Fig. 3 that School No. 1 has a higher percentage of attainment in both ability to draw and ability to appreciate than the other types of schools. The line representing ability to appreciate is higher in all grades of this school than the line indicating drawing ability. From the fourth grade on, the percentages of attainment in both abilities gradually become more equal until in the ninth grade they are practically the same.

In School No. 2 the lines representing ability to appreciate and ability to draw fluctuate, showing drawing ability higher in some grades and appreciation higher in others.

In School No. 3 there is a higher percentage of attainment in ability to draw throughout the school than ability to appreciate. The total percentage of attainment in all grades is lower than in the other schools.

The figure shows further that an ability to appreciate is acquired in the fourth grade of School No. 1 equal to that of the seventh and eighth grades in School No. 2 and that this ability is more highly developed in the third grade of School No. 1 than throughout the entire school of type No. 3.

This may be accounted for by two factors: first, the environmental influence; and second, the carefully directed instruction

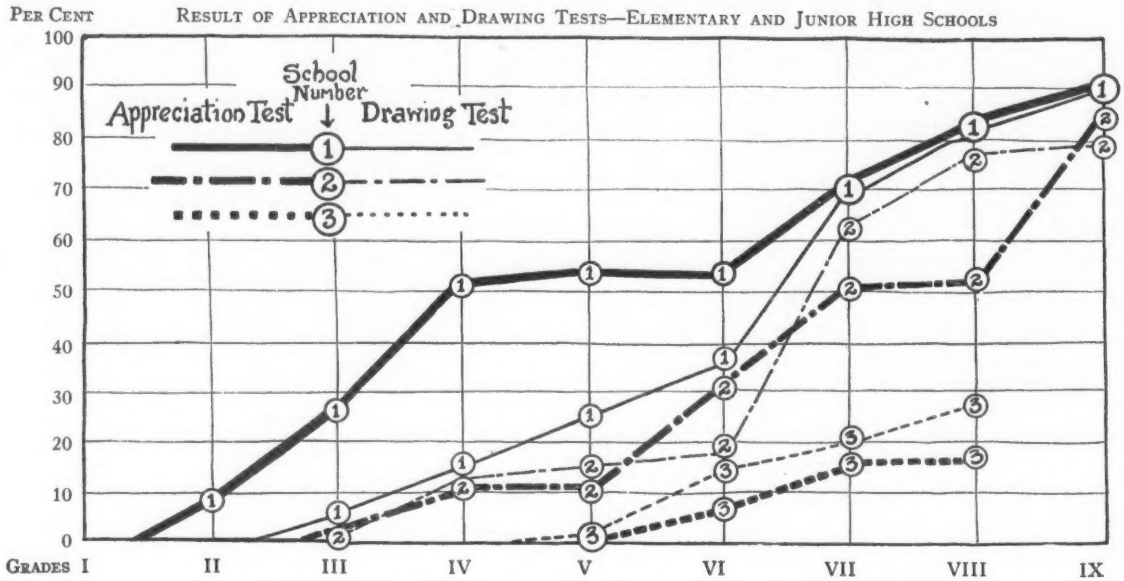

FIG. 3.—Indicating relative percentage of pupils ac[illegible]ring a grade of 70 or better

given in each grade of School No. 1 aiming to create a sound artistic judgment and appreciation.

Fig. 3 also shows that there is less variation between the lines indicating ability to draw in the different schools than between those indicating appreciation ability. This may be explained by the fact that the work in drawing has received more emphasis and has been better standardized than the other phase, in the majority of schools.

The tests used in this investigation were designed more particularly for the elementary school and a more careful study was made of the elementary school work than that of the more advanced grades because it is during the early period of training that the methods of presentation and efficiency of instruction are more influential in producing changes in the abilities set forth as being most worth while to test.

However, both tests were given in the junior high school and the appreciation test in the senior high school to obtain a comparison of the efficiency of instruction in developing ability in art appreciation throughout the entire secondary school.

It was found that this ability had not been developed sufficiently to enable 100 per cent of the pupils to attain a grade of 70 per cent or better before the art courses of the last year of high school. See Fig. 3.

Fig. 4 shows in detail the accomplishment of pupils of the various grades of School No. 1 in each problem of this test. The striking fact is that progress in various phases of appreciation is very different. Certain kinds of appreciation mature, as in problem 11, very early, others reach only a moderate level even in the upper grades, as problems 7 and 8. Some make steady gradual progress, as problems 2, 3, and 10, while others are quite erratic, as problem 8. It is evident from a study of these diagrams that color ability is most difficult to train, with pictorial and decorative composition and perspective coming next. Proportion and spacing, refinement of line and form, rhythm, harmony, and expression of line are phases of art that develop with no great difficulty.

A study of pupil-ability as illustrated by Fig. 4 suggests a method of obtaining aid in curriculum building and for further investigation in developing courses of study. For example, we find that problems in simple spacing and arrangement (problem 11

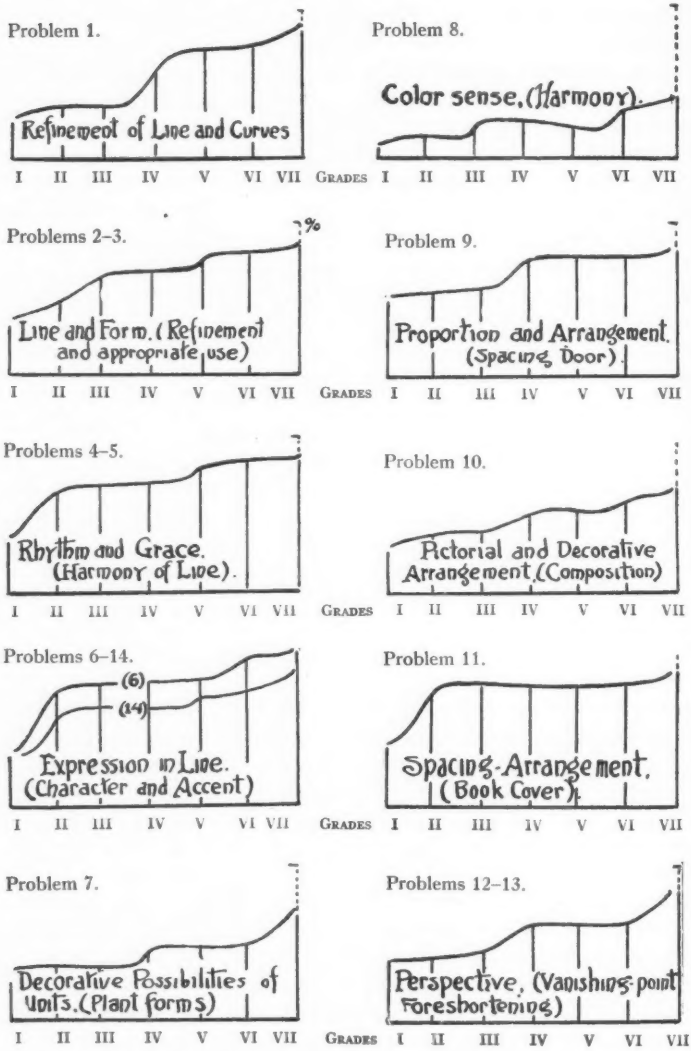
Problem 1.
Refinement of Line and Curves
I II III IV V VI VII GRADES
Problem 8.
Color sense. (Harmony).
I II III IV V VI VII
Problems 2–3.
%
Line and Form. (Refinement and appropriate use)
I II III IV V VI VII GRADES
Problem 9.
Proportion and Arrangement. (Spacing Door)
I II III IV V VI VII
Problems 4–5.
Rhythm and Grace. (Harmony of Line).
I II III IV V VI VII GRADES
Problem 10.
Pictorial and Decorative Arrangement. (Composition)
I II III IV V VI VII
Problems 6–14.
(6)
(14)
Expression in Line. (Character and Accent)
I II III IV V VI VII GRADES
Problem 11.
Spacing-Arrangement. (Book Cover).
I II III IV V VI VII
Problem 7.
Decorative Possibilities of Units. (Plant forms)
I II III IV V VI VII GRADES
Problems 12–13.
Perspective. (Vanishing point Foreshortening)
I II III IV V VI VII

FIG. 4—Showing accomplishment for each problem of Test No. 1 and steps of progress throughout the grades.

of appreciation test) generally can be mastered in the third grade; problems 1, 2, 3, 4, 5, and 6 (elementary problems in refinement of line and form, rhythm, harmony, and expression of line), in the fourth grade; problem 9 (simple proportion and spacing), in the fourth and fifth grades; problem 10 (pictorial and decorative composition), problem 8 (color harmony), and problems 12 and 13 (perspective) show gradual progress throughout the grades; therefore, simple principles of pleasing arrangement and spacing, simple color relations, and elementary principles of perspective can be introduced early. More complex problems in these types of art work can be introduced as the pupil develops in ability. Phases of decorative composition and design, color theory and perspective involving careful planning and thinking on the part of the pupil would not be introduced therefore before the sixth grade, and effective results from such work cannot be expected before the seventh and eighth grades or the high school. Real ability to understand color theory rarely appears before the last year of elementary school or the first year of high school.

CONCLUSIONS FROM SCHOOL NO. 1

A study of the curves plotted for each grade indicate that there is a retardation of the progress in ability to appreciate in the third grade. There is a slowing-down in the rate of progress of the better pupils and a decided catching-up by the poorer pupils.

This may be due to the fact that the content of the course fails to offer sufficient new material, or to the fact that there is a tendency in this grade to review and repeat the work of the two former grades. This would allow the slower pupils to catch up and tend to hold back brighter pupils by not offering them experiences of a new type.

In the fourth grade there is a decided improvement in the pupil's ability to appreciate and a corresponding increase in the number of higher marks. There is also a decrease in the percentage of poorer grades. This indicates an important change at this period, with the majority of pupils making marked progress in appreciation. There is not, however, this marked improvement in drawing ability.

This illustrates clearly the point made by Professor Sargent and Miss Miller in their book *How Children Learn to Draw*.[1] Children

[1] WALTER SARGENT and ELIZABETH E. MILLER, *How Children Learn to Draw*. Boston: Ginn & Co. Pp. 232–33.

at about the fourth grade lose interest in their drawing and become discouraged "because their ability to draw does not develop as rapidly as their ability to see."

At this period new interests and stimuli have to be introduced to keep up the pupil's progress in his art work.

This has been accomplished in School No. 1 but in School No. 2 this fault, common in many schools, still remains; see drawing curves, Fig. 3. It will be noticed that in School No. 1 there is a steady advance of the curve indicating drawing ability throughout the grades, but in School No. 2 this curve goes up rapidly until the fourth grade is reached. It then makes no great advance, remaining practically the same through the fourth, fifth, and sixth grades. It then makes a quick jump in the seventh grade. This undoubtedly is due in part, however, to the fact that at the end of the sixth grade many backward pupils are eliminated.

The fourth grade represents an important period in the art development of the pupil requiring special emphasis, consideration of subject-matter, and methods of instruction. Real art-ability, either in appreciation or drawing, does not develop to any great extent until the fourth grade is reached. This is shown by the bar-graphs of pupil-attainment in Fig. 2. Relative levels of attainment are indicated by the brackets, suggesting that there is a grouping of ability in art appreciation in School No. 1 as follows: (1) first grade; (2) second and third grades; (3) fourth, fifth, sixth, and seventh grades; in ability to draw: (1) first, second, and third grades; (2) fourth and fifth grades; (3) sixth and seventh grades.

The ability to appreciate and judge art-quality appears before the ability to draw well and develops much more quickly. Appropriate instruction in art appreciation should begin in the early grades in connection with the regular art work and advance with the capacity of the pupil throughout the grades so that he will not only have an ability to draw, but also will possess an ability to appreciate art-quality and be prepared to meet the art needs of home, civic, and occupational experiences of later life. The results of the tests show that a child may be quick to recognize and appreciate art-quality even though he cannot draw well; that he may draw very skilfully and not possess an understanding of art-quality or appreciation; that the two may develop and grow up together in the child, but that this is not usually the case unless carefully directed instruction has been devoted to this aim; that under such instruc-

tion a pupil in the fourth grade may attain as high a degree of art judgment as a pupil in the seventh and eighth grades without it. These results emphasize the fact that we must devise a means of obtaining a true estimate of the art-ability of the pupil in this two-fold sense, thus awarding him a just and honest mark as a measure of his accomplishment.

The present system of grading in art is based almost entirely on a pupil's ability in drawing, painting, and design. The child is expected to acquire the important ability of art appreciation through his training in these subjects. His mark, however, does not show whether he has obtained this quality or not and the instructor has not used accurate objective methods in determining whether desired results in this respect have been secured.

Curves plotted from the results of both tests in each grade show that the majority of pupils attain a medium mark, and that there are practically the same number of superior as inferior marks. The standard of attainment to be used in planning a course, therefore, should be based upon the accomplishments of the majority of pupils and not upon those of the small superior class as is usually the case.

From the foregoing analysis of aims or objectives of art education that will meet the demands of all pupils, it would seem that one of the chief missions of instruction in art is to provide a systematic training during the pupil's life in school in the fundamentals of appreciation of art-quality so that he may develop a sound art judgment and discrimination as a necessary mental asset to aid him in the solution of the art problems of everyday life.

The art courses thus have a double function to perform. The subject-matter and methods of instruction should be developed in such a manner that there will be correlation with all other work of the school and in practical relation to life outside of the school. A more extensive use of objective methods of measuring art-ability should be employed. A uniform marking system should be adopted for all the grades of a school and for all schools within a district so that a comparison and an effective study of results of instruction can be obtained. The method of scoring in art, also, should be analogous to that used in other subjects of the school.

FINANCING A SCHOOL SYSTEM[1]

J. O. ENGLEMAN
Superintendent of Schools, Decatur, Illinois

In facing the problems of school finance one must keep in mind that there are many angles from which to consider them. Theoretically, there is but one consideration—What is best for the public-school children in the system of schools concerned? Practically, a superintendent is compelled to shape his course of action in the light of existing school laws and charters, community sentiment, the attitude of his board of education, and, finally, his own vision as to the relative importance of the various types of school organization and the various features of it, including buildings, grounds, teachers, equipment, courses of study, schoolroom and janitors' supplies, etc. These four factors we may consider in the order named, for the school official must necessarily face them in this order, as a few illustrations will easily show.

Regarding the first of these factors, the school law in relation to the problem—the raising of school revenue is a matter controlled by state law in most states of the Union, though in some states, as in Illinois, certain school districts may operate under special charters granted by legislative enactment conferring privileges or imposing restrictions not applicable to the rest of the state. In any given city a superintendent will usually have to face the fact that there is a legal limit to the amount of money that may be raised for school purposes, and that there is a further legal provision concerning the division of the total available school revenue into the two large funds, known as educational and building, each existing for a distinct and specified purpose which must be respected. In Illinois, e.g., the legal limit for school revenues was for a great many years 3 per cent on the assessed valuation of the district, this amount to be divided equally between the educational and the building funds. In other words, 1½ per cent was the legal limit of the levy for either fund, and if it should happen that the educational fund needed 2 per cent while the building fund was

[1] Delivered on July 16, 1919, as one of the lectures of Superintendents' Week at the University of Chicago.

adequate when only 1 per cent was levied, such a partition was not possible under the law.

The handicap upon the finances of our schools in Illinois has been increasing greatly for a number of years, but the decreased purchasing power of a dollar which has come with the War, resulted in little less than a crisis in school finances here as elsewhere. Levies that were too small five years ago became more hopelessly inadequate as the years went on. At last it became apparent that relief must be sought through legislation. Two years ago a bill was introduced and passed by the legislature authorizing school districts, after a favorable local referendum vote, to increase their levy for the educational fund, but the measure was vetoed by the governor, and the financial situation of the schools continued to grow worse.

The past two years have served to crystallize public sentiment favoring more money for the schools. The leaders in Illinois in the creation of such sentiment have been the Illinois City Superintendents' Association, the Illinois State School Board Association, and the Illinois State Teachers' Association.

As would be expected, the nation-wide demand for better salaries for teachers had a helpful reflex influence upon the efforts of these and other organizations to secure larger school revenues, but even so, there was much to do to secure needed legislative relief. The story of this campaign would require an hour itself, if told in any detail. The outline of it, therefore, is all that can be touched upon at this time.

First, a bill had to be carefully drawn, embodying the provisions for increased levies for which the whole state was crying out. This duty was entrusted to a committee of three, representing the State School Board Association and the City Superintendents' Association. The committee included two lawyers and one superintendent. The lawyers were to supply the legal terminology and the superintendent to furnish the data needed for publicity and campaign purposes.

A pamphlet was prepared, printed, and sent out over the state to the number of ten thousand (10,000), telling of the crisis school finances had reached, and urging support of the bill just drawn up, a copy of which was made a part of the pamphlet. This was sent to the governor, members of the legislature, editors, associations of

commerce, rotary clubs, city and county superintendents, and numerous other organizations, bodies, and individuals.

With the secretary of the Illinois State Teachers' Association and the legislative committee of the same organization to follow up the bill after its introduction, the legislature was never permitted to forget the urgent need of the schools which this bill was designed to remedy. Literally thousands of letters and telegrams were sent to members of both houses and to the governor, some from every county in the state, I think. The teachers and school officials of the state were never more united and never in greater earnest about anything they ever undertook. The governor's prompt signing of the bill gave the state a school law which increases the local revenue-raising power of its school districts by 33⅓ per cent, and in many of them makes it possible to double the educational fund out of which teachers' salaries are paid. So great was the schools' need of this measure of relief that State Superintendent Blair was probably right in calling this the most important single school law enacted in Illinois since 1855.

The significance of this measure may be the more easily understood by a brief reference to its application to the schools in Decatur. There the equalized assessed valuation of property upon which school and other taxes may be levied is approximately $12,000,000. Our school levy next year, increasing from 3 to 4 per cent, will increase our income derived by local taxation from $360,000 to $480,000, a gain of $120,000. Those of you who may have tried to make bricks without straw, which being translated into pedagogical terms, means trying to make or keep a school system efficient with funds that do not make possible an adequate supervisory and teaching staff, will better appreciate what this means. Teachers who teach for a starvation wage in districts that would pay more but cannot legally raise the money with which to do it, will also understand it, I'm sure.

Important as this law is, another law just passed in Illinois deserves attention because of its bearing upon school finances. I refer to the law which increases the state distributable fund from $4,000,000 to $6,000,000, an increase of just 50 per cent. The State Teachers' Association passed a resolution in December favoring a $10,000,000 state distributable fund, and through its legislative committee worked for months for such a law. It was gratify-

ing to its committee to find or to create a considerable sentiment in both houses of the assembly favorable to such a fund, but the odds were against it, and only $6,000,000 was secured at the recent session. Even this amount, however, will tend to equalize the burden of taxation for the public schools in the several parts of the state. How great the need for such an equalization will appear from an illustration. In Macoupin County are two districts but three miles apart. It just happens that the children and the assessed valuation of property in these two districts are in such extremely inverse ratio that in 1915 the one district had to levy $5.79 upon every $100 of assessed valuation of property, while in the other the property was taxed but 13 cents for school purposes. In other words, the burden of local taxes was forty-four times as great in the one district as in the other. It is the presence of such situations as this that justifies the cry for a large state distributable fund, whereby all the wealth of the state, wherever found, may help to educate all the children of the state, wherever they may be found. There is a growing recognition of the principle, indeed, that public education is not merely a local concern but a state responsibility, while the events of the past four or five years especially have convinced many thoughtful people that it is almost equally a national obligation, having even an international significance.

In Illinois the annual cost of the public schools is now more than $50,000,000. The $4,000,000 of this which has been raised by a state-wide tax is thus seen to be but about 8 per cent of the total amount required. It is true that there are some states which raise an even smaller percentage than this, but the forty-eight states of the Union raise in the aggregate by state taxes about 15 per cent of all that they expend upon their public schools, while each of at least seven states raises more than 40 per cent of their total school funds by this means. If Illinois were to raise through state taxes a percentage of its total budget comparable with that similarly raised by New Jersey, for example, it would have a state distributable fund of $23,000,000 instead of the $6,000,000 we shall have next year.

But the 50 per cent increase just secured will mean for Decatur more than $11,000 more from the state fund—enough, indeed, to add fifty dollars ($50) to the salary of every teacher in the system.

Thus far I have spoken only of the legislative aspect of our problem. As stated at the outset, this is not infrequently the most fundamental and important phase of the problem. It is and has long been so in Illinois, and not less so in many other states, I'm persuaded.

The second consideration is more local. It is a question of community sentiment. Some communities could do more for their schools but will not. The problem then is one of changing public sentiment. It is a matter of educating the public, and it calls for leadership, for courage, for tact, and often for persistence, patience, and dogged determination. One of the most important functions of the superintendent in many cities is that of arousing his patrons and the tax-payers to an appreciation of the fact that the schools are inefficient because not financially supported—that they are cheap because they cost so little. Sometimes it is a matter of leading the community to see the need of more money for buildings; again it may be for equipment, for teachers' salaries, for supervision, or for still other aspects of school work. With respect to any one of these items the community may be wholly satisfied and deal with it in a niggardly fashion, even while making generous provisions for the schools in other respects.

Various means have been successfully employed in educating communities to a sense of the financial needs of the schools. They all involve comparisons, however, and statistical evidence concerning the money expended elsewhere and the results accomplished thereby. The school survey conducted by outside experts has been most effectively used in a number of cities for this purpose. When outside and wholly disinterested investigators come into a school system, and after an examination of conditions as found, report too little money spent upon the schools as a whole, or too much or too little upon some particular phase of them, the superintendent has the sort of backing and moral support that he may require to bring conviction to the community. Such a survey enabled the school authorities in St. Louis to float a big bond issue for the erection of new buildings. It helped Baltimore to loosen up and give more liberal support to its schools at numerous points. It revealed the limitations in Alton's schools to an extent that made an almost complete reorganization under capable leadership a possibility within a single year. It made it easier for Springfield

to do a number of things which the community, unaided, would hardly have sanctioned.

In Decatur, we have profited largely by the surveys made in other cities. We found a good deal of complacency upon the part of the public with reference to its schools.

Year after year the legal maximum was levied and expended, and the public was disposed to say that if this did not result in good schools, the failure must be due to bad management upon the part of the school administrators. Complaints from school officials that more money was needed to keep the schools abreast of the times—to keep them from deteriorating—were scarcely heeded at all. In fact, the public seemed to resent the complaints and the requests for more money and to assume that the fault was with the superintendent or the board if good schools could not be maintained upon the income theirs had.

Finally, the superintendent began a study of the published reports of the several surveys that had been made. Valuable statistical information concerning the per capita cost of elementary schools and of high schools in fifty or sixty cities was obtained and the facts tabulated and charted. Administrative, operative, instructional, and maintenance costs in these cities, and still others, were likewise learned and reduced to tables and charts. Various subdivisions of these separate items were studied and corresponding items in Decatur's expenditures were compared with them. With all the facts at hand the superintendent presented various phases of them through the local papers week after week. He used them as texts in addressing the Board of Education, the mothers' clubs, the Association of Commerce, Rotary Club, Woman's Club, and still other civic bodies. At last the truth began to dawn upon the people. Decatur was not spending too much for its schools. It was not spending enough—was below the average and below the median of all the cities studied in the per capita cost of its schools. It ranked among the cities in the lower third of the group as classified upon a per capita cost basis. The facts could not be denied. The people had to admit them. The comparative size of classes in the elementary schools and in the high school, the salaries paid to teachers, the cost of supervisors, of operation, the per capita cost, all pointed to the same conclusion—the board was spending all the money it could raise, but could not raise all its schools really

required to keep them up to a reasonable level of efficiency. The public was fair enough to grant that its board of education could not and should not be expected to maintain for $4.00 such an educational unit as an average city spent $5.00 to secure.

This admission from the people was not secured overnight. The campaign of education here very briefly related was really kept up for three or four years. It had to be kept up to get results. Much of that period was very discouraging. It seemed that no impression was being made. Our writing and speaking, our pleas and requests and criticisms seemed alike unavailing. There was simply no reaction to them, save for the editorial support regularly given by the *Decatur Herald*. It sometimes seemed that our writing and speaking were merely tolerated as the criticisms and requests of an irresponsible but harmless child might have been. But seed was being sown which did spring up in due season, and a harvest of votes in behalf of the schools as surely resulted from it. Perhaps the community was ready to respond favorably even much earlier than it did, and merely awaited an occasion for taking a stand.

The first occasion it had, came with the proposal to discontinue the work of three ungraded rooms, the importance of whose work the public had been led to appreciate. Their discontinuance was but part of a policy of retrenchment that would enable the schools to live within their income. It was announced that since it cost at least $1,500 more to teach the forty-five children in these three rooms than it would cost to absorb them in the regular schoolrooms, they would have to go until revenues could be increased.

First, the mothers' clubs were aroused, and offered to give from their treasuries $500 for the purpose, if the Board of Education would keep the ungraded rooms. But this still involved an apparently unwarranted outlay of $1,000. The board was therefore obdurate. Then the mothers appealed to the Rotary Club for help. The club listened to the appeal and then referred the matter to its "public affairs" committee. This committee reported favorably to the club. But its members were, of course, not very familiar with the work of ungraded rooms. The superintendent of schools, himself a Rotarian, was very naturally called upon to enlighten the club concerning the matter at once. At the conclusion of his talk, a brief but pointed one, a member moved that the club pledge the $1,000 needed for the maintenance of the ungraded

rooms, remarking that "if these rooms are as helpful in their work as the superintendent says they are, this club would better go out of business if it can't raise $1,000 to save them." The vote was then taken unanimously favoring the pledge, and the rooms were saved. But the pledge and its redemption, saving the ungraded rooms, were not the best fruits of that incident. One hundred and twenty representative business and professional men of the city, the leaders of the city in every civic enterprise, were interested in the schools, and committed to their improvement. This means much more than the gift of $1,000.

Some two years later, a second test came when the board voted to erect two new buildings, one a junior high school, requiring a bond issue of $225,000, the largest single issue in the history of its schools. A special election was necessary to get the people's consent for the bond issue. Not being able to be present at the last meeting of the Rotary Club before this election, I wrote an appeal to the club calling for their support of the bond issue, and showing its significance to the schools of the city. A resolution followed pledging the help of the club in putting across the bond issue, and election day found dozens of Rotarian autos out carrying the voters to the polls to redeem the pledge. The size of the majority of votes favoring the bond issue was one more evidence of the fact that the community had been educated to the point for which we had so long worked, sometimes almost despairingly.

But the final evidence was not all in until this spring, after the law was passed authorizing boards of education to increase their school levies from 3 to 4 per cent, provided the people should favor it in a referendum vote. Once more a special election was held. There was but one proposition to vote upon—Shall the Board of Education be authorized to increase its levy for the educational fund from 2 to 2½ per cent? It had already announced that it would increase the building fund by an equal amount. City taxes, county, road and bridge taxes, income taxes, all were going up. It was an opportune time to defeat the school tax increase, but when the votes were counted, the largest vote that had ever been polled at a school election in the district, it was found that for every ballot cast in opposition to the increase, there were nine cast in favor of it. The ratio, while not quite so good as the sixteen to one made famous by Bryan, was just as good for all practical purposes, and proved

that the people were ready to finance their schools to the new legal limit.

I realize that equally long and vigorous efforts to change public sentiment may not be equally successful in some communities. There are political and financial interests intrenched in some cities so formidably that the situation is all but hopeless. In serving as chairman of the Legislative Committee of the Illinois State Teachers Association during the recent session of the legislature, I made some fifteen trips to Springfield, and learned not only some of the secrets of legislation, but also some of the machinations of big corporate interests in blocking desirable legislation, even for schools. Perhaps there will yet be salvation for Chicago and New York and some of the other largest cities, but the day of salvation seems afar off.

The problem of finance, furthermore, involves the attitude of the board. This is a factor to be reckoned with very seriously in some communities, but in others it may be of slight consequence. There is an increasing tendency for boards of education to carry out the recommendations of the superintendent, and to look upon him as an expert who must not only know what the schools ought to have but also know it in relation to costs, sources of income, total budget, etc. Of course, the board must fix the rate of levy, issue bonds when they are required, and pay the bills that are allowed and the salaries due under contract. But if the board is made up of men who have vision, integrity, and confidence in the leadership of their superintendent, it is not likely to be a very serious factor in framing a financial policy for the schools. This, of course, does not mean that the board is to be a sort of rubber stamp for the superintendent. It must adopt a policy and be responsible for it to the people, but if the superintendent is functioning as he ought to function, he will formulate most of the policies of the schools and be prepared to show why the board should adopt them.

As a matter of fact, it is possible to find every conceivable practice upon the part of boards, from unquestioned ratification of the recommendations of the superintendent with reference to organization of the schools, courses of study, textbooks and supplies, salaries of teachers, buildings and equipment, to the opposite extreme in which the initiative is taken by the board or some one of its members in nearly every one of these matters.

But there remains the question of finance from the standpoint of the superintendent. He must think of everything he proposes,

not only in terms of its educational value, but also in terms of its cost as well. Kindergartens for the elementary schools and a highly differentiated manual arts curriculum for the high school may easily be justified educationally, but be impossible, or at least unwise, because of their cost. Certainly an elementary-school room of thirty-five pupils, and a high-school class of twenty in English are educationally preferable to a room of forty-five and a class of thirty respectively. But it may be necessary for financial reasons to deal with the larger numbers in spite of the educational handicap imposed thereby.

During the years we were struggling to maintain decent educational standards in our own schools with the limited funds available, some enthusiastic but ill-informed admirer of the Gary schools suggested that we modify our organization after the fashion of the Gary system, as a means of retrenchment without educational loss. Why not? Were not these schools the envy and the despair of less conspicuous men and systems everywhere? But just about that time we had the first authoritative statement of costs in the Gary system, and we were able to show that aside from the initial cost involved in providing ourselves with auditoriums, gymnasiums, playgrounds, shops, and equipment making that modification possible, and assuming that it is desirable, we should need to increase our educational fund some $125,000 per year to finance it. Obviously our relief had to be sought in other directions.

There is an increasing tendency today towards the preparation of carefully prepared budgets of school needs, to be approved by the Board of Education, and used by it as the basis for its annual levy upon the property valuation of the district in raising school funds for the year. This budget can at best be but an estimate, of course, but when it is made with thoughtful care, based upon careful records of previous experience, and in the light of such evidence as school officials may have of city growth, increase in enrollment, advance in the cost of materials, desirable expansion of the system or richer educational opportunities to be offered, it may be made with a considerable degree of accuracy. Its making in this fashion certainly adds to the peace of mind of school officials charged with the financial administration of the school, and inspires confidence in them at the hands of citizens and tax-payers generally.

In the making of a budget one needs to be guided not alone by past experience and probable growth in one's own system, but by

available records of other systems as well. Applicable to the larger school systems one may find a wealth of statistical material in volume IV of the published survey of the St. Louis Public Schools. This financial survey, made by Dr. Rugg, of the University of Chicago, treats in illuminating detail public-school costs in St. Louis, and is instructive for students of the problem in any city.

More useful to smaller cities is Deffenbaugh's *School Administration in the Smaller Cities*, Bulletin No. 44, published by the Bureau of Education in 1915, and Spaulding's *Financing the Minneapolis Schools*, issued in 1916, to say nothing of the report of the Newton Public Schools, issued by the same superintendent in 1913—an epoch-making report in this field.

As an example of the profitable use which one may make of published data concerning school finances and costs in other cities, I may cite an experience of our own.

I had before me figures telling the percentage of our school expenses for the year just ended going for operation, and for the various subdivisions of this item, e.g., light and power, fuel, water, janitors, etc. I was comparing these percentages with the percentages of corresponding items in the average of thirty or forty other cities from which I had the data. As a result I noticed that the ratio of our expenditure for light and power to our total disbursements from the educational fund was practically twice as high as that in the average of the cities studied. I wondered why it should be so, and resolved to find out. Upon investigation I learned that for years light and power had been furnished by a public service corporation and charged for as if each separate school in our system were a separate consumer. As a matter of fact the sixteen schools in the system constitute one consumer, and the total amount consumed by the public schools entitled them to a rate about half as high as each separate school had been charged. An adjustment of rates was asked for, and granted, with a generous rebate for past overcharges. This means for a period of years a saving of thousands of dollars, although the difference between .6 of 1 per cent and .3 of 1 per cent looked inconsequential enough at first glance.

This is but a trifling illustration of a check upon one item of school expenditure made possible by having and using a statistical measuring stick. One is not always justified in being governed by averages and medians and prevailing practices. There may be

excellent reasons in a given case for expending for a specific purpose a percentage of the total budget not sanctioned byaverages for that item in other cities. But the school administrator who compares the ratio of the per capita cost for his elementary- and high-school instruction with corresponding ratios in other schools, who knows what he is spending for supervision, for teachers' salaries, for janitor service, for other operating expenses, for supplementary readers, manual training, art supplies, business administration, or other activities, in relation to similar items of cost in other schools of the same general class—such an official is likely to command the confidence and the support of his constituents first of all. He is likely to deal more wisely than he otherwise could with the numerous phases of his complicated problem, and, finally, he will preserve his own sanity longer, and add to his administrative usefulness to a degree that he could not do by standing alone.

Recapitulating, financing a school system, whether of a city large or small, involves adjustments that cannot be made intelligently except as one keeps in mind school law, local community sentiment, the vision or the myopia of the Board of Education, and, finally, the best practices of other schools whose records are available.

A SURVEY OF ARITHMETICAL PROBLEMS ARISING IN VARIOUS OCCUPATIONS

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I. THE PURPOSE OF THE SURVEY

A few years ago Dr. Frank McMurry, in an address before the Superintendents' Section of the National Education Association, advocated the elimination of all subject-matter which did not meet the needs of present-day social and business life. Dr. McMurry voiced an opinion that had become current among many thoughtful laymen and educators, but, at that time, no scientific studies and investigations had been made as a basis on which to determine just what topics might be considered important, and what might be considered non-essential.

Since that time, however, a large number of extensive and careful investigations have been made into the various subjects of the elementary and secondary schools by scholars and research students in education, which show that in many of our school subjects topics that long ago had become of little or no value as functioning in everyday experiences are still being studied in the schools, while topics that have become of general interest in our present complex civilization, as a result of rapidly changing industrial and economic changes and business practices, are either receiving less consideration than their importance demands, or are neglected entirely.

Because of the universal use of arithmetic in our daily work, much careful study has been given to the subject with the purpose of determining the essentials in arithmetic, so that only the really important and useful phases of the study may be emphasized in the school, thereby saving time for more interesting and useful study. To this work, valuable contributions have been made by Dr. W. A. Jessup, at the University of Iowa; Dr. L. D. Coffman, at the University of Illinois, Professor G. M. Wilson, at the Iowa State College; Professor W. S. Monroe, at the State Normal School, Emporia, Kansas; and others.

In the main, those who have made these studies have followed four general plans to secure their data:

First.—To select problems from a number of standard textbooks. (Monroe's plan)[1]

Second.—To submit a list of problems of elimination and enrichment to county and city superintendents asking them to indicate by check mark the topics that should be eliminated and the ones that should be emphasized. (Coffman and Jessup's plan)[2]

Third.—To submit to men and women engaged in various occupations a questionnaire containing topics in arithmetic asking them to check the topics for which they find use in practical work in arithmetic. (Plan of the Committee of the Iowa State Teachers' Association)[3]

Fourth.—To have mature people write down the problems, through a period of time, which they have actually solved in connection with their work. (Wilson's plan)[4] In this study Professor Wilson received 5,036 problems.

In the fall and winter of 1917–18 the writer began a study in arithmetic for the following purposes:

1. To determine what kind of arithmetical problems adults use in their daily work and the frequency of their occurrence.

2. To determine the classification of these problems and the different operations involved in solving them.

3. To obtain suitable problems for making standard tests for all grades—the lists to be determined by graded steps of difficulty and to contain enough problems so that the possibility of pupils memorizing the problems might be avoided.

II. SOURCES OF MATERIAL

The fourth plan mentioned above was followed in collecting the problems. Letters explaining the nature of the undertaking and containing the following instructions were sent to superintendents, principals, and teachers in high schools and the sixth, seventh, and eighth grades, asking their co-operation. The point

[1] WALTER S. MONROE, "A Preliminary Report of an Investigation of the Economy of Time in Arithmetic," *Sixteenth Yearbook of the National Society for the Study of Education*, Part I (1917). Pp. 111–27.

[2] W. A. JESSUP, "Economy of Time in Arithmetic," *Elementary School Teacher*, Vol. XIV, No. 10, June, 1914.

[3] G. M. WILSON, "A Survey of the Social and Business Uses of Arithmetic," *Sixteenth Yearbook of the National Society for the Study of Education*, Part I (1917). Pp. 128–42.

[4] *Ibid.*, p. 132.

was emphasized that any kind of problem which the parent actually solved was desired, no matter how simple or how difficult. The letter of explanation was as follows:

A STUDY OF PROBLEMS IN ARITHMETIC

The purpose of this study is to make an extensive collection of actual problems which adults solve in their daily work.

To teachers in the sixth, seventh, and eighth grades and to teachers of commercial arithmetic in high schools—

Please make a collection of problems according to the following outline:

1. Collect problems for one week. It is hoped that as large a number of problems as possible may be obtained through each pupil. We desire, if possible, to secure at least one problem each day, or five for the week, from each pupil.

2. Boys collect problems from the father, girls from the mother.

3. The pupil should simply ask the parent whether or not he or she has had any use for arithmetic during the day; if so, what? Then write down the problem. Do not solve it. Please emphasize that we do not want manufactured problems, but problems actually occurring.

The following simply suggests the way the problems should be stated. Any kind of problem that the parent is called upon to solve should be given, no matter how simple or how complicated. Problem: I bought from the grocer two dozen eggs at 37 cents a dozen, one pound of lard at 22 cents, and three cans of peas at 17 cents each. How much was my bill?

4. Have pupils write down the problems on rough paper, and at the end of the week have them copy the problems according to the following form:

Mr. or Mrs.....
Occupation (be sure to give it).....
Pupil's name.....
Grade.....School.....City.....State.....

State the problems. Do not solve them.

5. Give your collection to the principal or mail it directly to Professor Daniel Starch, Department of Education, University of Wisconsin, Madison, Wisconsin.

Important: These problems will come as first-class matter. Simply affix one THREE-CENT stamp and write on the envelope, "Collect the balance from the addressee," or send the package by express collect.

In order that the study might cover as wide a range of activities as possible, problems were solicited from schools in Wisconsin, Iowa, Illinois, Missouri, Texas, and California. Many of the superintendents and teachers were unable to assist for various reasons but all told more than 8,000 problems were received and carefully examined. Since the work on these problems was finished, some 2,500 additional problems have been received which will be used for further study.

The writer is indebted to the superintendents, principals, and teachers in the following towns and cities for the problems sent:

San Antonio, Texas; Des Moines, Iowa; Quincy, Illinois; Algoma, Arcadia, Evansville, Green Bay, Horicon, Linden, Madison, Manitowoc, Stoughton, Sun Prairie, and Two Rivers, Wisconsin. Collecting problems from the rural districts was indeed a difficult undertaking and was made possible only through the efforts of Superintendent J. A. Van Natta, of Iowa County, Wisconsin; Superintendent J. H. Steiner, of Adams County, Illinois; and Superintendent A. L. Odenweller, of Henry County, Illinois.

III. METHODS OF CLASSIFICATION

A very simple method of classification was followed. Problems involving only addition were listed under the heading "Addition." The same plan was followed where the problems were so simple as to require only one operation. Problems involving only combinations of the four fundamental processes, addition, subtraction, multiplication, subdivision, were classified under headings showing the two or more operations involved. To illustrate, a problem like the following was listed under the heading "Multiplication": "I bought 6 tons of coal at $10 a ton. What is the cost?" The following was classified under the heading "Multiplication and Addition": "I bought an automobile for $1,325, 2 tires at $50 each, and 18 gallons of gasoline at 22 cents a gallon. How much did it all cost? Write a check for the amount in favor of the Badger Automobile Company." The various combinations of the four fundamental operations under which by far the greatest number of problems were classified is shown in Table II, page 124. Such problems as did not fall into the foregoing classifications were listed under the regular headlines which are commonly followed in standard textbooks, such as, dry measure, cubic measure, percentage, etc.

The writer personally classified nearly one-half of the problems. The remainder was classified by advanced students of Dr. Daniel Starch, Department of Education, University of Wisconsin, working at regular scheduled hours, under the writer's personal direction.

From the beginning, great care was taken to delete problems that were of doubtful validity. This is not always an easy matter to determine, as for instance, one problem called for the number of acres in a triangular field at certain given dimensions. At first, one is likely to question the reliability of such a problem, but such fields are quite common, as where a railroad right-of-way cuts through a farm bounded on two or more sides by a public road. It

TABLE I

OCCUPATIONAL ACTIVITIES OF THE MEN WHOSE PROBLEMS WERE REPORTED

Acid-maker	2	Foreman—Switch Engine Crew.	1
Agent—for Nursery	1	Foundryman	2
Aluminum Manufacturing	1	Freight Checker	1
Architect and Engineer	1	Freight Handler	1
Artist	1	Fruit Seller	2
Assistant Manager—Manufacturing Company	1	Garage-keeper	2
Auditor—Oil Company	1	Gardener	4
Auditor—State Department	1	Glassworker	1
Auto Repair	1	Grain-buyer	1
Banker	1	Grocer	10
Barber	3	Hotel Proprietor	1
Blacksmith	10	Insurance Agent	1
Bookkeeper	2	Jailor	1
Box and Crate-maker	1	Janitor	1
Brakeman	1	Jeweller and Watch-maker	1
Brewer	2	Laborer	37
Bricklayer	1	Lawyer	2
Business Agent	1	Letter Carrier	2
Business Manager—Newspaper	1	Lumberman	1
Butcher	4	Manager—Auditing Department	1
Buyer—Department Store	1	Manager—Coal Docks (Yards)	1
Cabinet-maker	2	Manager—Delivery Company	1
Capitalist	1	Manager—Lumber Company	1
Carpenter	19	Manager—Machine Shop	1
Cashier	1	Manager—Stone Company	1
Cattle and Hog Buyer	6	Market Master	1
Cement Worker	1	Marshal and Street Commissioner	1
Chauffeur	1	Mason	2
Chief of Police	1	Mechanic	9
Cigar Manufacturer	1	Mechanical Engineer	1
Claim Agent	1	Messenger	1
Clerk	6	Miller	2
Clerk—District Court	1	Millwright	2
Clothier	1	Miner	4
Coal Dealer	1	Minister	6
Collector	1	Motorman	1
County Judge	1	Moulder	3
County Treasurer	1	Moving Picture Operator	1
Dairyman	4	Night Watchman	3
Deputy Sheriff	1	Nurseryman	1
Display Compositor	2	Oil Dealer	1
Draftsman	1	Packer	1
Electrician	2	Paperhanger, Painter, and Decorator	8
Engineer	2	Pattern-maker	1
Eye and Throat Specialist	1	Photographer	1
Evangelist	1	Physician	3
Farmer	295	Plasterer	2
Fisherman	1	Plumber	6
Foreman—City Crossing Department	1	Postal Clerk	1
Foreman—Field	1	Postman	3
Foreman—Freight House	2	Printer and Binder	1
Foreman—Machine Shop	6	Pump Repairer	2
Foreman—Steel Plant	1	Railroad Carpenter	1
		Rate Clerk	1

Real Estate Agent	1	Superintendent—Packing Company	1
Restaurant-keeper	1	Superintendent—Printing Company	1
Revenue Deputy	1	Tailor	5
Rural Mail Carrier	2	Tanner	1
Salesman	15	Teacher	1
Saloonkeeper	2	Telegraph Operator	1
Scaler in Sulphate Mills	1	Thresher	1
Secretary—Department Store	1	Tobacco Dealer	1
Shipbuilder	2	Tobacco Stemmer	1
Station Agent	1	Traffic Superintendent	1
Stationary Engineer	1	Treasurer	1
Stockman	1	Truck Driver	1
Switchman	1	Undertaker	1
Superintendent—Coal Mines	1	Water Plant Overseer	1
Superintendent—Duck Farm	1	Wholesale Millinery Dealer	1
Superintendent—Odd Fellows Home	1	Wholesale Wine Merchant	1
Superintendent—Old Peoples Home	1	Woodworker	2

OCCUPATIONAL ACTIVITIES OF THE WOMEN WHOSE PROBLEMS WERE REPORTED

Cateress	1
Domestic	7
Dressmaker	7
Housewife	136
Pastry Cook	1
Rooming-House Keeper	1
Trained Nurse	1

was finally decided to follow the plan of accepting only such problems as common-sense and the experience of those familiar with various phases of the work would sanction. All others were rejected. Between 600 and 700 problems were thus thrown out. Several problems about which the writer was doubtful were submitted to professional opinion before they were admitted to classification. This accounts for the fact that several difficult problems appear that can readily be solved by arithmetic, but involve a knowledge of physics and engineering. Problems like the following were considered as unreliable and were consequently discarded:

If a man has 20 customers to call on and 2 are new customers and he sells 600 pounds, what is the average amount sold to the old customers?

Bought $1.05 worth of meat. It furnished four meals for five people and a remnant worth 10 cents was left over. How much did it cost for each person?

A man has a ditch 100 feet long he wants dug for which he will pay $100. Two men take the job and each wants to earn $50. One end of the ditch is hard ground, the other soft. The man who digs the hard portion receives $1.25 per rod while the man who digs the softer portion receives 75 cents a rod. How many rods must each dig to receive $50?

What will 1 dozen fence posts cost which are 6 feet long 6 inches square at the long end and 4 inches square at the small end if lumber is worth $40 a thousand?

Multiply 6/14 by 7/8.

TABLE II

SHOWING THE TOTAL NUMBER OF PROBLEMS CLASSIFIED FROM FOURTEEN CITIES

Classification	Total Number of Problems	Percentage*
Addition	318	12.4
Subtraction	63	2.5
Multiplication	209	8.3
Division	138	5.5
All four operations	54	2.1
Addition and subtraction	189	7.5
Addition and multiplication	589	23.6
Addition and division	29	1.2
Addition, subtraction, and multiplication	222	8.9
Addition, subtraction, and division	18	0.7
Addition, multiplication, and division	130	5.2
Multiplication and subtraction	44	1.8
Multiplication and division	87	3.5
Multiplication, division, and subtraction	7	0.3
Division and subtraction	17	0.7
Total	2,114	84.2
Bank discount	3	0.1
Board measure	10	0.4
Carpeting	15	0.5
Commision	3	0.1
Cord or wood measure	3	0.1
Cubic measure	10	0.4
Dry measure	8	0.3
Fencing	1	0.04
Fractions	73	2.9
Hay in stack	1	0.04
Hay in mow	1	0.04
Insurance	2	0.08
Interest	31	1.3
Land measure	5	0.2
Linear measure	12	0.5
Liquid measure	10	0.4
Lumber	5	0.2
Masonry	2	0.08
Mensuration	9	0.4
Milk test	3	0.1
Papering	8	0.3
Percentage	97	3.9
Proportion	1	0.04
Roofing (other than shingles)	2	0.08
Shingling	2	0.08
Square measure	19	0.7
Trade discount	48	1.9
Total	384	15.18
Grand Total	2,498	99.38

* The percentage column at the right shows the percentage of problems under each heading, based on the grand total number, 2,498 problems.

The following problems exhibit more completely the manner in which they were classified. In this study no attempts were made to classify problems with reference to the difficulty of solution. The first two represent clearly the most common type of problems and those most easily solved; those in cubic measure,

masonry, mensuration, and shingling represent the more difficult ones, while the list containing "problems not commonly found in everyday experience" includes the problems most difficult to solve.

Addition.—Bought a pair of boy's shoes for $4, a cap for 50 cents, a suit for $12, and a pair of hose for 35 cents. How much was my bill?

Subtraction.—A lady went to the store and bought groceries which amounted to $5.69. She gave the clerk a $20 bill. How much should she receive?

Multiplication.—A man sold 3 hogs at 15 cents a pound. The hogs averaged 200 pounds each. How much did he get for his hogs?

Division.—When potatoes are selling for $1.25 per bushel, how many bushels can I buy for $10?

All four operations.—I took a load of barley to town. The wagon weighed 1,340 pounds. Barley and wagon weighed 4,310 pounds. At $2.10 a bushel, how much would the load bring?

Addition and subtraction.—I had a $10 bill. Out of this I had to pay the light bill which was $2.43; the telephone bill, $2.12; and buy some groceries amounting to $3.27. How much did I have left?

Addition and multiplication.—Find the expense to build a boat, working 6 days a week, for 3 weeks; 2 laborers at $2.50 a day; 3 blacksmiths at $3.00 per day; 4 shipbuilders at $3.50 per day; 3 calkers at $4.50 per day, including $100 for other expenses.

Addition, subtraction, and multiplication.—Mrs. Brown bought 3 dozen eggs at 53 cents and 2 pounds of butter at 55 cents. She paid the bill with a $5 bill. How much should she get back?

Addition, subtraction, and division.—I bought the weekly supply of groceries—1 sack of flour at $3; 1 dozen oranges at 50 cents; 1 pound of coffee at 30 cents; 1 package of breakfast food at 24 cents; 1 peck of apples at 50 cents; 1 pound of butter at 50 cents; 1 dozen eggs at 48 cents. I returned one-half of the oranges and one-half of the eggs, for which I received credit. How much was my bill?

Multiplication, addition, and division.—We get 12 dozen eggs each week and the eggs are sold at 31 cents per dozen. I make 20 pounds of butter which I sell at 40 cents a pound. How long will it take to pay a grocery bill of $25 if these prices continue?

Multiplication and subtraction.—I owed the grocer $5.35. I took to the store 15 dozen eggs and the grocer was paying 30 cents a dozen. How much cash did I have to pay?

Multiplication and division.—I drove 42 miles in a car. Get 11 miles out of a gallon of gasoline. How many gallons are needed and what is the cost if gasoline is 20 cents a gallon?

Multiplication, division, and subtraction.—A farmer sold a load of hay for $20 per ton. How much did he receive for it if the gross weight was 4,315 pounds and the tare 1,265 pounds?

Division and subtraction.—My grocery bill was $14.28. I gave the grocer a check for $15 and told him to give me sugar for the rest of the money. How much sugar could I get at 11 cents a pound?

Board measure.—I bought lumber as follows: 2 pieces each of 156 feet long, 6 inches wide, 1 inch thick; 4 pieces each 12 feet long, 6 inches wide; 2 pieces, 2 inches by 4 inches and 16 feet long. How many feet of lumber did I buy?

Carpeting.—A room is 11 feet 6 inches wide and 14 feet long. What will it cost to cover the floor with inlaid linoleum at $1.60 per square yard? The cost of laying is 5 cents per square yard.

Commission.—I sold 3 head of cattle at Mr. Brown's sale, receiving $30 for 1 and $37.50 each for the other 2. The auctioneer received 1 per cent and the clerk ½ per cent. Find their commissions and the amount I received after deducting their commissions.

Cord or wood measure.—I sold a pile of wood 4 feet wide, 5 feet long, and 9 feet high. How many cords did it contain and what was the price at $8 a cord?

Cubic measure.—A corn bin is 8 feet wide, 32 feet long, and 10 feet high. How many bushels of corn will it hold, allowing 1¼ cubic feet to a bushel?

Dry measure.—How many bushels of oats will it take to feed 4 horses 3 months, feeding them each 3 quarts per day?

Fencing.—I wish to enclose my hog field with a woven wire fence. The field is 30 rods wide and 50 rods long. At 40 cents a rod, how much will the wire cost?

Fractions.—A recipe calls for ¼ cup of lard, 1 cup of milk, and ¾ cup of chopped nuts. How much of each will I need to make one-half of the recipe?

Hay in mow.—I sold a bent of hay 36 feet long, 12 feet wide, and 16 feet high at $30 a ton. Allowing 380 cubic feet to the ton, how many tons did I sell and how much did I receive for the hay?

Interest.—I borrowed $25 at the bank and pay 7 per cent interest. How much interest will I have to pay the bank for the use of the money for 60 days?

Land measure.—How many acres in a field 60 rods long and 30 rods wide?

Linear measure.—How many yards of curtain material will it take for 3 windows 6 feet high, allowing 6 inches for hems and 2 widths for each window?

Liquid measure.—How much milk will our family buy in 1 month and how much is the bill if we buy 3 quarts a day at 7 cents a quart?

Lumber.—What will be the cost of the lumber for a grain bin 20 feet by 30 feet by 12 feet high at $20 per M?

Masonry.—How many bricks 2 inches thick, 8 inches long, laid flat, will it take to wall a well 40 feet deep, 4 feet in diameter?

Mensuration.—A silo is 27 feet high and the inside diameter is 14 feet. How many tons of ensilage does it contain when full, 40 pounds to the cubic foot? How many days will the ensilage last 27 head of cattle, each receiving 35 pounds a day?

Milk testing.—Sold a can of cream containing 81 pounds. The test was 27 per cent; butter fat was worth 48 cents. How much did I receive for the cream?

Papering.—What will be the cost of papering a room 16 feet long, 12 feet wide, and 9 feet high, deducting 7 yards for a door and 7 yards for a window, if the paper is 48 cents a roll? The paper is a double roll 18 inches wide and 16 yards long.

Percentage.—The invoice price of a bill of goods is $9 per dozen. The merchant wants to mark these goods so as to make 20 per cent profit after adding 10 per cent to the invoice price for transportation. What is the selling price per dozen?

Plastering.—We wish to plaster one of our rooms which is 16×12×9. It costs 35 cents a square yard to plaster. How much does it cost?

Roofing (other than shingle).—A shed is 48 feet long and 12 feet wide. How many rolls of roofing will I need if each roll is 108 feet long and 1 yard wide?

Shingling.—How many bundles of shingles must I buy to shingle a shed 20 feet wide, roof ½ pitch, ridge pole 30 feet? The eaves project 8 inches. Shingles laid 4½ inches to the weather. What would be the cost at $12.50 per M?

Trade discount.—If an oil stove is listed at $25 and discounts allowed are 25 per cent and 2 per cent, what is the net price to the dealer?

TYPES OF PROBLEMS NOT COMMONLY FOUND IN EVERYDAY EXPERIENCE

How many cubic feet of cement will be needed to lay a 4-inch floor over a circular span 8 feet 3 inches in diameter? How much concrete will be needed to mix the cement if one part of concrete is used for every 4 parts of sand? (*Explanation*: A mixture of 1 cubic foot of cement and 4 cubic feet of loose sand will make 3.59 cubic feet of concrete.)

A man is willing to give a troop of boys a show at 50 per cent rate. If the boys pay $2.50 a thousand for having the tickets printed and sell them for 25 cents each, and pay a 10 per cent war tax on each ticket, how many tickets will the boys have to sell to gain $50? The management pays the rental on the film. If the theatre contains 356 seats how many shows will they have to run?

A freight train running at the rate of 25 miles an hour leaves Chicago 8 hours in advance of a passenger train running at the rate of 40 miles. How many miles will the freight train have to travel and how much time will have to elapse before the passenger train overtakes it?

A hood for a stove is 24 inches in diameter and 22 inches high. The diameter of the smoke pipe is 8 inches. Want to make hood 36 inches in diameter and keep the angles *A* and *B* the same in both hoods. How high must the hood be?

Find the indicated horse-power of a steam engine, size 30-inch cylinder, 48-inch stroke, 100 revolutions per minute. Mean effective pressure 78 pounds per square inch.

What is the capacity per hour of a water pump, size water cylinder 10 inches, stroke 14 inches, number of strokes per minute 100? (Express in gallons.)

A shipment of oil consisting of 10 barrels each weighing 534 pounds is to be made from Quincy, Illinois to Novinger, Missouri. The rate on oil to the said station is 15.89 cents per hundred pounds. War tax is 3 per cent of the entire amount of freight. The shipment being sent prepaid, what will be the amount to collect?

A complete record of the occupational activities of those who submitted problems was kept in so far as the occupations were

TABLE III

Showing the Classification of Problems Collected Through City High Schools

Classification	Algoma Wisconsin	Des Moines Iowa	Green Bay Wisconsin	Madison Wisconsin	Stoughton Wisconsin	Sun Prairie Wisconsin	Total Number of Problems	Percentage*
Addition	1	79	19	18	14	8	139	11.7
Subtraction		9	13	5	1	1	29	2.4
Multiplication	2	53	10	8	4		77	6.4
Division	3	20	12	5			40	3.4
All four operations	4	6	6	9		1	26	2.3
Addition and subtraction		43	23	39	9	12	126	10.6
Addition and multiplication	10	141	61	46	8	8	274	23.0
Addition and division		6		1	2	3	12	1.0
Addition, subtraction, and multiplication	4	37	41	31	1	18	132	11.1
Addition, subtraction, and division		2	1	3		3	9	0.8
Addition, multiplication, and division	2	13	4	23	10		52	4.3
Multiplication and subtraction		13	5	3	2		23	2.2
Multiplication and division	2	24	4	4	1		35	2.9
Multiplication, division, and subtraction		2	1	2			5	0.5
Division and subtraction		3	6	2			11	1.0
Total	28	451	206	199	52	54	990	83.6
Bank discount		2					2	0.17
Board measure		3	2	1			6	0.51
Carpeting	2	5	3				10	0.85
Cubic measure	1	2					3	0 25
Cord measure			1				1	0.08
Commission		1	2				3	0.25
Dry measure	2						2	0.17
Fencing		1					1	0.08
Fractions	2	15	6	2	2		27	2.29
Hay in stack		1					1	0.08
Hay in mow	1						1	0.08
Insurance	1						1	0.08
Interest	2	7	10	6			25	2.12
Land measure	4	1					5	0.42
Linear measure								
Liquid measure			1		1		2	0.17
Lumber	2						2	0.17
Masonry		2					2	0.17
Mensuration		1	6	1			8	0.68
Milk test	3						3	0.25
Papering	2	3		1			6	0.51
Percentage	2	25	14	7	1		49	4.16
Proportion	1						1	0.08
Roofing	1						1	0.08
Shingling	1			1			2	0.17
Square measure	4	4		2			10	0.85
Trade discount	2	11	8	6		1	28	2.38
Total	33	84	53	27	4	1	202	17.10
Grand Total	61	535	259	226	56	55	1,192	100.7

*The percentage column at the right shows the percentage of problems under each heading, based on the grand total number, 1,192 problems.

TABLE IV

Showing the Classification of Problems Collected by Pupils of the Sixth, Seventh, and Eighth Grades

TABLE IV

SHOWING THE CLASSIFICATION OF PROBLEMS COLLECTED BY PUPILS OF THE SIXTH, SEVENTH, AND EIGHTH GRADES

Classification	Arcadia Wisconsin	Evansville Wisconsin	Horicon Wisconsin	Linden Wisconsin	Manitowoc Wisconsin	Quincy Illinois	Quincy, Ill. (Col. Schl.)	San Antonio Texas	Stoughton Wisconsin	Two Rivers Wisconsin	Total Number of Problems	Percentage*
Addition	.....	4	27	4	27	42	4	31	37	3	179	13.7
Subtraction	.....	.....	9	.....	10	8	.....	2	4	1	34	2.6
Multiplication	1	5	18	3	37	38	4	13	8	5	132	10.1
Division	.....	4	6	.....	29	27	16	10	3	3	98	7.5
All four operations	2	4	1	1	8	2	3	2	1	4	28	2.1
Addition and subtraction	1	2	6	1	10	15	9	13	5	1	63	4.82
Addition and multiplication	4	5	37	2	93	44	15	87	15	13	315	24.12
Addition and division	1	.....	.....	1	5	7	1	.....	2	.....	17	1.30
Addition, subtraction, and multiplication	3	2	23	2	19	13	7	19	1	1	90	6.80
Addition, subtraction, and division	2	2	.....	.....	1	.....	.....	.....	4	.....	9	0.68
Addition, multiplication, and division	5	3	1	6	8	30	10	10	.....	5	78	5.99
Multiplication and subtraction	.....	.....	5	.....	3	6	3	4	.....	.....	21	1.61
Multiplication and division	2	.....	4	1	19	20	.....	3	1	2	52	3.90
Multiplication, division, and subtraction	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	0.15
Division and subtraction	.....	1	.....	.....	2	2	.....	1	.....	.....	6	0.46
Total	21	32	137	21	271	254	72	195	81	40	1,124	85.83
Bank discount	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	0.08
Board measure	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	4	0.31
Carpeting	.....	.....	.....	.....	2	3	.....	.....	.....	.....	5	0.38
Cubic measure	.....	2	.....	.....	3	2	.....	.....	.....	.....	7	0.53
Cord measure	.....	1	.....	.....	.....	.....	.....	1	.....	.....	2	0.15
Commission	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dry measure	.....	2	.....	.....	1	3	.....	.....	.....	.....	6	0.48
Fencing	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fractions	1	1	.....	.....	21	10	9	3	1	.....	46	3.55
Hay in stack	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hay in mow	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Insurance	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	0.08
Interest	.....	.....	.....	.....	1	2	.....	2	1	.....	6	0.46
Land measure	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Linear measure	.....	.....	10	.....	.....	1	.....	.....	.....	1	12	0.92
Liquid measure	.....	.....	2	.....	1	.....	1	1	.....	3	8	0.61
Lumber	1	.....	.....	.....	.....	2	.....	.....	.....	.....	3	0.23
Masonry	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mensuration	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	0.08
Milk test	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Papering	1	.....	.....	.....	.....	1	.....	.....	.....	.....	2	0.15
Percentage	3	1	4	1	25	7	.....	6	.....	1	48	3.70
Proportion	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Roofing	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	0.08
Shingling	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Square measure	1	.....	1	.....	3	3	.....	.....	1	.....	9	0.70
Trade discount	2	3	3	1	1	3	.....	7	.....	.....	20	1.5
Total	9	10	20	2	63	39	10	20	3	6	182	13.99
Grand Total	30	42	157	23	334	293	82	215	84	46	1,306	99.82

* The percentage column at the right shows the percentage of problems under each heading, based on the grand total number, 1,306 problems, collected through sixth, seventh, and eighth grades in city schools.

reported. In nearly one-half of the cases the occupation was not reported, but in Table I, which shows the occupational activities, there appears a list of 141 different occupations for men and 7 for women, which is sufficiently large to warrant the conclusion that problems from a group representing so many varied interests would show the kinds of problems people in general are called upon to solve in their daily life.

IV. RESULTS

This study reveals the fact that an overwhelming majority of the problems which arise in daily life are very simple, requiring for solution only the four fundamental operations and their combinations. Table II shows that out of a total of 2,498 problems submitted and accepted from the city schools 2,114, or 84.2 per cent, may be classified under the fundamental operations. The same table shows that 728 of these problems, or 29.1 per cent, are in simple addition, subtraction, multiplication, and division. Table II is simply a summary of Table III which shows the classification of problems collected through the city high schools, and Table IV, which shows the classification of problems collected through the sixth, seventh, and eighth grades of city schools.

The rural districts submitted 4,847 problems which were accepted and classified. Of these 4,161, or 85.92 per cent, were classified under the fundamental operations as shown in Table V. Of the total number 1,505, or 31.07 per cent, are classified under the four processes: addition, subtraction, multiplication, and division. The percentage of problems in the rural districts that are classified in addition, subtraction, multiplication, and division is considerably larger than in the case of the problems from the city. Comparing Tables II and V the problems in both classified under the four fundamental processes and their combinations show a difference of only 2.37 per cent. The classification, therefore, is practically the same in both rural and city districts. This condition is probably due to the fact that in both the rural and city districts the need for arithmetic occurs most frequently in buying and selling.

In order to determine whether there would be any appreciable difference in the classification of problems from a city where interests are of a special type and in a city where the interests are more diversified, a comparison was made between the problems submitted from Quincy, Illinois and Manitowoc, Wisconsin. From

Quincy, where the activities are in shipping, manufacturing stoves, wagons, incubators, wholesale millinery, with agricultural industries well represented, 375 problems were accepted and classified. Of these, 326, or 86.9 per cent, are classified under the four fundamental operations and their combinations. One hundred and

TABLE V

SHOWING THE CLASSIFICATION OF PROBLEMS FROM THE RURAL DISTRICTS

Classification	Adams County Illinois	Henry County Illinois	Iowa County Wisconsin	Total Number of Problems	Percentage*
Addition	136	78	29	243	5.02
Subtraction	95	10	17	122	2.5
Multiplication	493	170	212	875	18.05
Division	147	58	60	265	5.5
All four operations	40	35	16	91	1.9
Addition and subtraction	105	15	8	128	2.7
Addition and multiplication	629	249	89	967	19.95
Addition and division	16	16	6	38	0.8
Addition, subtraction, and multiplication	605	69	24	698	14.4
Addition, subtraction, and division	14	1	.....	15	0.3
Addition, multiplication, and division	91	88	79	258	5.3
Multiplication and subtraction	146	20	23	189	3.9
Multiplication and division	134	25	45	204	4.2
Multiplication, division, and subtraction	34	2	3	39	0.8
Division and subtraction	23	5	1	29	0.6
Total	2,708	841	612	4,161	85.92
Bank discount	1	.....	.....	1	0.02
Board measure	21	.....	4	25	0.5
Carpeting	33	2	6	41	0.8
Compound interest	.....	1	.....	1	0.02
Compound proportion	.....	1	.....	1	0.02
Commission	5	4	.....	9	0.2
Cord or wood measure	9	1	12	22	0.45
Cubic measure	41	12	47	100	2.06
Dry measure	12	.....	5	17	0.3
Fencing	2	2	16	20	0.4
Fractions	33	9	11	53	1.1
Hay in stack	2	3	2	7	0.14
Hay in mow	2	.....	11	13	0.3
Interest	26	9	16	51	1.1
Land measure	15	3	9	27	0.5
Lumbering	5	2	1	8	0.16
Linear measure	8	2	.....	10	0.2
Liquid measure	4	1	7	12	0.24
Masonry	5	.....	1	6	0.1
Mensuration	6	1	16	23	0.5
Milk testing	.....	.....	13	13	0.24
Papering	24	6	15	45	0.93
Painting	4	.....	.....	4	0.1
Plastering	2	.....	1	3	0.06
Percentage	62	16	24	102	2.1
Roofing	3	2	.....	5	0.1
Shingling	9	1	2	12	0.24
Square measure	25	4	7	36	0.8
Trade discount	6	13	.....	19	0.4
Total	365	95	226	686	14.08
Grand Total	3,073	936	838	4,847	100.00

*The percentage column at the right shows the percentage of problems under each heading, based on the grand total number, 4,847 problems.

thirty-nine problems, or 37.07 per cent of the total, are classified in addition, subtraction, multiplication, and division. Manitowoc,

TABLE VI

SHOWING THE TOTAL NUMBER OF PROBLEMS CLASSIFIED FROM ALL SCHOOLS BOTH CITY AND RURAL

Classification	Total Number of Problems	Percentage*
Addition	561	7.7
Subtraction	185	2.4
Multiplication	1,084	14.7
Division	403	5.4
All four operations	145	1.97
Addition and subtraction	317	4.3
Addition and multiplication	1,556	21.1
Addition and division	67	0.8
Addition, subtraction, and multiplication	920	12.5
Addition, subtraction, and division	33	0.5
Addition, multiplication, and division	388	5.3
Multiplication and subtraction	233	3.1
Multiplication and division	291	3.97
Multiplication, division, and subtraction	46	0.63
Division and subtraction	46	0.63
Total	6,275	85.00
Bank discount	4	0.041
Board measure	35	0.5
Carpeting	56	0.7
Compound interest	1	0.001
Compound proportion	1	0.001
Commission	12	0.2
Cord or wood measure	25	0.4
Cubic measure	110	1.5
Dry measure	25	0.4
Fencing	21	0.3
Fractions	126	1.7
Hay in mow	14	0.2
Hay in stack	8	0.1
Insurance	2	0.002
Interest	82	1.12
Land measure	32	0.5
Linear measure	22	0.3
Liquid measure	22	0.3
Lumber	13	0.2
Masonry	8	0.1
Mensuration	32	0.5
Milk testing	16	0.2
Painting	4	0.06
Papering	53	0.7
Percentage	199	2.71
Plastering	3	0.04
Proportion	1	0.001
Roofing	7	0.1
Shingling	14	0.2
Square measure	55	0.8
Trade discount	67	0.9
Total	1,070	14.776
Grand Total	7,345	99.776

* The percentage column at the right shows the percentage of problems under each heading, based on the grand total number, 7,345 problems.

a city of industries of rather a special type, as shipbuilding, aluminum manufacturing, and excellent harbor and lake trade, contributed 334 problems of which 271, or 81.1 per cent, are classified

under the four fundamental operations and their combinations. One hundred and three of these problems, or 30.8 per cent, are in addition, subtraction, and division.

Estimated on the basis of frequency of occurrence, the findings in the study would indicate that in general the work in the four fundamental operations should receive more attention in our

TABLE VII

SHOWING THE TOTAL NUMBER OF FRACTIONS OCCURRING IN ALL PROBLEMS

Fractions				Percentage*
1/2	occurred	837	times	72.09
1/3	"	49	"	4.22
2/3	"	39	"	3.35
1/4	"	84	"	7.23
3/4	"	63	"	5.41
1/5	"	5	"	0.43
2/5	"	3	"	0.25
3/5	"	3	"	0.25
4/5	"	3	"	0.25
1/6	"	8	"	0.68
5/6	"	4	"	0.34
1/7	"	4	"	0.34
2/7	"	2	"	0.17
3/7	"	2	"	0.17
1/8	"	14	"	1.20
3/8	"	5	"	0.43
5/8	"	3	"	0.25
7/8	"	7	"	0.60
4/9	"	1	"	0.086
5/9	"	1	"	0.086
8/9	"	3	"	0.25
1/10	"	1	"	0.086
2/10	"	3	"	0.25
3/10	"	2	"	0.17
4/10	"	2	"	0.17
6/10	"	1	"	0.086
7/10	"	1	"	0.086
9/10	"	1	"	0.086
1/12	"	1	"	0.086
8/12	"	1	"	0.086
11/14	"	1	"	0.086
1/15	"	1	"	0.086
1/16	"	1	"	0.086
7/16	"	1	"	0.086
7/17	"	1	"	0.086
16/17	"	1	"	0.086
1/20	"	1	"	0.086
1/36	"	1	"	0.086
Fractions occurred 1,161 times				99 876

* The percentage column at the right shows the percentage of fractions under each heading, based on the total number, 1,161 fractions.

schools. Dr. W. A. Jessup, in his study, found that an average of over 70 per cent of county superintendents and superintendents of the smaller towns and cities recommended an increase in attention to these subjects.

One is rather surprised at the relatively small number of problems occurring in interest and insurance while no problems appear

in stocks and bonds, investments, taxes, building and loan and public expenditures. Educational magazines have been emphasizing the need for study of problems in banking, insurance, investments, savings accounts, etc., and many believe that such topics now constitute a considerable part of the arithmetic used by the average person. The writer offers no explanation for the absence of such problems in this study.

Problems in mensuration, cubic and square measure, occasionally arise in connection with farm work, as in finding the cubical contents of silos, bins, cribs, the amount of hay in stacks, sheds, and mows.

A study of the tables reveals the fact that the average person uses only the common tables of measures and weights. They show that time given to the solution of such problems as involve apothecaries' weights, paper folding, the rood, the perch, foreign exchange, etc., might better be given to more practical study.

Table VII shows a classification of all fractions that appeared in the statement of the problems and the frequency of their occurrence. Fractions occurred 1,161 times. The fraction 1/2 appeared 837 times, which is 72.09 per cent of all the occurrences. The fractions 1/2, 1/3, 2/3, 1/4, 3/4, 1/5, and 1/8, occurred 1,091 times out of a total of 1,161 times, or, 93.9 per cent of the total. These fractions appeared in price lists, also in connection with uneven yards in dry goods, in filling recipes, etc. The problems indicate that women have equally as much need for the use of fractions as have men. The following problems illustrate clearly the way in which the most of the problems involving fractions were stated:

One of our fields which we had in barley contained 6 3/4 acres. The field yielded 392 bushels of barley which we sold at $1.50 per bushel. How many bushels per acre? How much money per acre?

What will be the value of 9 1/2 tons of hay at $17 per ton?

I bought 4 yards of gingham at 15 cents per yard; 1 1/2 yards of blue cambric at 12 1/2 cents per yard; 1 pair of hose at 50 cents. How much was my bill?

SUMMARY

1. Out of a total of 7,345 actual problems classified from cities and from rural districts, representing the problems that adults are called upon to solve, 85 per cent may be classified under the four fundamental operations and their combinations.

2. Differences in the classification of problems from city and rural districts are negligible; that is, the percentage of problems from both districts that may be classified under the four fundamental processes and their combinations is about equal.

3. A comparison of classification of problems collected from Quincy, Illinois, where the interests are diversified, and Manitowoc, Wisconsin, where the interests are more specialized, shows that the types of problems are substantially the same.

4. This study shows that in actual daily practice people are seldom called upon to solve the problems in compound interest, compound proportion, insurance, painting, plastering, masonry, and bank discount.

5. No problems were received involving taxes, investments, stocks and bonds, equation of payments, averaging of accounts, present worth and true discount, partial payments, foreign exchange, apothecaries' weight, alligation, annual interest, compound and complex fractions, folding paper, troy weight, or the metric system.

6. The fractions 1/2, 1/3, 2/3, 1/4, 3/4, 1/5, and 1/8, occurred 1,091 times out of a total of 1,161 times, or 93.9 per cent, of all fractions. Fractions occurred most often in the process of multiplication.

7. The problems show that the common tables of measures and weights should be mastered for they are used continually in actual practice.

COMMENTS

1. This study indicates that much of the formal instruction in arithmetic has little or no use in common practice.

2. It is recommended that much less time should be given in the elementary schools to types of problems enumerated in paragraphs 4 and 5 of the foregoing summary. Topics in arithmetic that have become obsolete should be eliminated.

3. Some banks and various business houses make constant use of interest and computation tables, thereby avoiding much of the actual figuring employed at an earlier time. It is suggested that pupils in the elementary schools be taught how to use such tables.

4. More attention should be given to types of problems that arise in the daily occupations of the people, such as problems in the use of fundamental operations and the common tables of

measures and weights. Practical problems in great numbers can readily be collected in any community, and they create an interest and furnish a motive for the work in arithmetic that cannot be aroused through hypothetical problems in a text. Such problems should be used as supplementary material.

5. Dr. W. A. Jessup and Dr. L. D. Coffman, of the Committee on Economy in Time, recommended on the basis of the judgments obtained from 984 city and county superintendents that more time might be wisely devoted to the study of "the social, economic, and arithmetical issues involved in such facts as saving and loaning money, taxation, public expenditures, banking, borrowing, building and loan associations, bonds and stocks, tax levies, insurance, profits, public utilities, and the like."[1]

The findings of this investigation would indicate that in such areas as those covered by this survey, much time need not be given to the study of arithmetic as involved in public expenditures, building and loan associations, bonds, stocks, and tax levies, since no problems in these subjects were received. It is not improbable that in large commercial and industrial centers there is a sufficient number of persons interested in these problems to warrant devoting a larger amount of time to their study. Further investigation covering the larger cities seems advisable in order to establish this conclusion.

[1] W. A. JESSUP, "Current Practices and Standards in Arithmetic," *Fourteenth Yearbook of the National Society for the Study of Education*, Part I (1915). Pp. 116–30.

PROJECT-TEACHING IN GRADE SIX[1]

RUBY MINOR
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Much has been said about motivation, and project-teaching is no longer viewed with suspicion by progressive teachers; but we have by no means exhausted the possibilities when we have merely made school work a little more interesting for our pupils.

The lower grades have perhaps profited most by this progressive movement—just why, it is somewhat difficult to ascertain. Perhaps it is because younger pupils are more responsive. Dare we say that our upper-grade pupils have been so restricted that they have temporarily lost the power of initiative? Many of us have found this to be apparently true, but we are not ready to say that upper-grade work cannot be greatly improved by centering the school activities around projects or *purposeful acts*.

It is the belief of the writer that sixth-grade pupils have wonderful powers of initiative and a hitherto undiscovered executive ability that may be developed if proper stimuli are provided. It is with the hope of suggesting possibilities along this line that the following account is written.

We centered our first semester's work in the sixth grade around European geography, motivated by our War interests and activities, the culmination of which was a pageant entitled "Rebuilding Europe," which was written and presented by the pupils. What could we find in our second semester that would be so absorbingly interesting and so far-reaching in educational possibilities as the War had been? This question was uppermost in the mind of the teacher. With it came the corollary: If the work of the first semester has been successful in developing initiative and a more than usual interest in school activities, will the pupils not be able to choose their own project or projects?

Believing that such a procedure is the surest test of her teaching, and convinced that activity proposed by the class is far more productive of desired results than that which is superimposed by

[1] It will be noticed that music is not reported as a definite part of this project. Because songs and folk-dancing had been an important part of the work of the previous semester, it was considered advisable to place less emphasis on music in this project.

authority, the teacher made the work as interesting as possible and waited. (If we could only learn the art of waiting, we might more often see real development in our pupils.)

The course of study called for the geography of Asia and Africa. At the beginning of the semester the nation was engaged in a large drive for funds for Armenia. Our interest in the War made it quite easy to become interested in this situation. While studying Armenia, the class became interested in the Turks, and it was only natural that the oppression in Syria and Palestine should lead to a study of these countries.

The pupils were always asked to state the problem in which they were interested. Often these problems were solved as a group project, and sometimes as individual projects to be reported to the class. The problems were usually about the people of the various countries; e.g., How do they dress? What kind of homes do they have? What are their industries? How do their schools compare with ours? What customs do they have that differ from ours?

Before these problems were solved we outlined topics which must be known in order to answer them correctly. In this way the pupils had a keen motive for studying location, climate, surface, government—in fact, all the topics which would be considered essentials—and yet it was all done at the pupils' suggestion to help them in solving a problem of real interest.

By this time the pupils were thoroughly interested in the Near East, and were ready for the question: Why do you suppose that we have heard so much about Europe and so little about Asia? Various answers were received but the class was not urged to come to a definite decision, as the question was one on which the teacher wished more thought to be given.

An interest in Arabia was aroused by reading a few of the best tales from *Arabian Nights*. The pupils were encouraged to bring newspaper and magazine clippings and illustrations of any of the countries studied. We soon had an interesting collection of pictures showing the life typical of each country.

The class now decided that many people are not interested in Asia because they know so little about it. Since we always consider the Training School our nearest community, and are constantly encouraging the sharing of pleasure, the natural question was: What can we do to let the Training School know some of the interesting things about Asia and Africa?

By careful and sympathetic questioning and discussion the class decided to give an oriental exhibit at the close of the semester. In order to make their exhibit a true representation they must know as much as possible about each country. This was a beginning but was quite sufficient to motivate many lines of school activity. Every suggestion in regard to what we could do to make an interesting exhibit was evaluated by the class and accepted or rejected according to the judgment of the pupils.

A few of the problems studied are listed here. (It should be noted that the situation was so built by the teacher that the pupils felt the need and stated their own problems.)

Why do four-fifths of the population of Asia live in the southeastern part?
In what ways are the Asiatic people different from the Europeans?
Why is India so densely populated?
What are the chief cities of India and why are they important?
Take an imaginary trip to the Holy Land by use of pictures and books.
How does peasant life in Palestine compare with peasant life in Europe?
What is there of interest to an American tourist in Arabia?
Why is Japan the only Asiatic country which is considered a World Power?
Why does Japan want to control China?
Imagine trips in Africa, with Roosevelt in the Jungles, with a caravan crossing the Sahara, a Boer in the Transvaal, etc.
How can we best represent these countries in our exhibit?
What is typical of each country?

Desk outline maps were colored to emphasize locational geography in Asia, and a papier-mâché relief map of Africa was made as a group project. These appeared in the exhibit.

The new flag of China was painted by each pupil, and these made an effective border on one wall of the exhibit room.

A sand table representation of a Kongo village was the contribution resulting from a study of that section of Africa.

Composition immediately assumed a more important place, because it was agreed that we would wish to write about the various countries. The selection of interesting subjects, and the securing of a variety of expression were sufficient motives for much discussion and criticism, and to have one's paper chosen for display was a strong incentive for best effort. Lack of space in this article eliminates a discussion of the development of each composition. Some of the titles may, however, be suggestive.

1. Write about the country of the Near East in which you have been most interested. Select a particular phase for discussion.

2. Tea culture in India.
3. A letter home written at Ghadames, Tripoli, after an imaginary trip across the Sahara Desert.
4. A newspaper article written to the home paper by a colonist in Belgian Kongo.
5. Silk industry in China. Discuss one phase.
6. Cotton culture in Egypt.
7. Gold in South Africa.
8. Any topic which interested you on Japan.

An added interest was felt in this work, because the best stories were to be told to the fourth grade, which had recently given an operetta for our pleasure. Since the sixth grade could do more extensive reading, the class wished to contribute something which the fourth grade had not already learned in planning their entertainment. Much valuable discussion arose over the choice of suitable topics, best sources of material, and the final expression of each written exercise.

The presence of a Japanese student from Princeton University furnished a real motive for best effort, and his talk to the pupils enlarged their experience. An invitation was extended to him and his friends to attend our oriental exhibit which increased the interest.

Some of the titles of the compositions on Japan were:

1. Japanese Holidays
   The Flag Festival
   The Doll Festival
2. Japanese Industries
   Rice Culture
   Cormorant Fishing
   Raising Silk Worms
3. What the Japanese Make from Bamboo
4. Japanese Schools
5. Japanese Government
6. Odd Customs

Spelling ideals were uniformly high and perfect papers became the standard. The lists of words were usually suggested by the pupils who recognized or anticipated their own needs for effective written work.

Penmanship, an especial weakness in this class, now received added attention, lest our exhibit should receive unfavorable criti-

cism, for by this time it was decided that the entire Normal School as well as parents and friends should be invited.

The reading was varied and interesting and covered almost every phase of that subject. Reading for information became a necessity, and, because of the keen motivation, was attacked with a zest not always attendant upon this class of reading material. The teacher had anticipated the needs, and as each country was studied, available books from every possible source were accessible on classroom shelves. Pupils were encouraged to work in the city library and they frequently asked for that privilege. There is an abundance of material on almost every topic of interest, but it often requires careful searching to find the rare bits possessing real literary value. A few suggestions will serve to illustrate the nature of this type of work.

Kipling's *Just So Stories* and the *Jungle Books* were enjoyed while studying India. *The Pipes of Luchnow* was also appropriate at this time.

The Arab and His Steed by Mrs. Norton was read with appreciation during our study of Arabia; also *Abdallah, Son of the Desert.*

Blossoms from a Japanese Garden by M. M. Fenollosa furnished choice poems.

The work on Africa was enriched by such selections as "Elephant Hunting" from *Wild Beasts and Their Ways* by Sir Samuel W. Baker, and *Lion Taming. Moses on the Nile,* translated from Victor Hugo, increased the child's appreciation of choice literature, and made the picture of Egypt more vivid.

The Burial of Moses by Mrs. Cecil Francis Alexander is also good.

Selections from the Bible for opening exercises received a new meaning because of our study. The lives of Abraham, of Joseph, of Moses, and of Jesus now had the realistic geography as a background in the child's mental picture.

No oriental exhibit could be complete without much attention to the aesthetic effect; so our art work received a new inspiration. After due consideration and discussion, the class decided to make cut-out colored poster effects typical of each country studied. This was another incentive for knowing the scenic wonders, the peculiar customs, and the native costumes of the countries to be represented.

The first efforts were somewhat discouraging from an aesthetic viewpoint, but the interest and efforts of the pupils were all that

could be desired. So we continued, and were pleased to see the class daily growing more discriminating in judgment and more skilful in execution.

The final results were most gratifying, and even a disinterested observer could recognize such subjects as "Transportation in the Orient," for there was the elephant from India, the camel in a desert scene, the jinrikisha, and even the babe strapped to his mother's back in the "Land of the Rising Sun."

Care was taken that each pupil should select his subject according to his own interests, and should be aided in expressing it satisfactorily. Historic accuracy of subject-matter, color-values, proportion, perspective, skill in cutting and mounting all received special attention.

Egyptian pottery was one of the most interesting subjects studied. Pupils studied the history of pottery as an industry and planned a visit to a local pottery. The fact that Trenton ranks second in this great enterprise gave additional reason for emphasis, and increased the interest in the modern phases of the industry.

Vase forms were designed by each pupil. This gave practice in free cutting, originality in selecting appropriate motifs and color effects, and skill in applying the principles of artistic arrangement. The pupils then molded clay vases, applying the principles already learned. When these vases were painted and shellacked, the effect was very pleasing.

Perhaps the most interesting feature was the assembling of all of our work for the exhibit. This was a problem which must receive careful consideration. Six booths of uniform size were built, 7½ feet high, 4½ feet wide, and 6 feet long. The entire front and roof of each booth was left open. Partitions and walls were made of strawboard, to give a firm foundation. Light gray bogus paper was used as a final covering for the walls to give a soft neutral background for the mounted work. All this material was used in full-sized sheets so that it could be used again.

All art work was mounted on dark brown, green, or gray; whenever possible a uniform size, 9 by 12 inches, was used. The art work was placed on the wall opposite the entrance. Compositions and spelling papers, all mounted on brown craft paper, occupied the right wall, and mounted pictures collected by pupils were placed on the left wall. With this much uniformity in each booth it was possible

to add individual touches without spoiling the general balance so necessary in a large display.

The entire front (of the six booths) was ornamented across the top with a façade effect. This, with the partition posts, was decorated. An oriental border design was worked out on squared paper and colored black. When pattern was cut out and mounted on deep, rich red the effect was truly oriental, and was greatly enhanced by a fancy lantern in each booth, illuminated by an electric bulb. The lanterns were made of rice paper, each one having a design appropriate for a particular booth. The booths were arranged in the following order: the Near East, including Armenia, Syria, Palestine, Arabia, India, and Persia; China; Japan; and a double-sized booth for Africa.

Besides the work already described there were several industrial charts, including silk charts in the Chinese booth, and cotton and gold charts in the African booth.

Since the silk chart is typical of the general idea of all, a brief description may be helpful. During the study of the silk industry pupils were encouraged to bring samples of silk materials that design might be studied, and illustrations of the various stages of silkworm raising and manufactory of silk, and pictures of articles made from silk. The selection, arranging, and mounting of this material gave practice in the principles of art involved. The best list of articles made from silk written by a pupil was also placed on these charts.

There were many choice articles contributed by pupils or friends which gave a realistic effect to each booth. Among these were a poster, written in English and Chinese by a local Chinese man, a Japanese game, Japanese ptotery, a silk shawl from India, pottery, silk scarf and novelties from China, a collection of African stamps, etc. Children, costumed to represent the natives from each country, greeted the visitors and completed the oriental picture.

There is a feeling among some school authorities that project-teaching will of necessity eliminate some of the school subjects, or cause them to be neglected. Perhaps an account of how this situation was provided for may help an eager, but doubting, teacher.

Some confusion has arisen over the terminology, as the term "project" has been used in various ways. A project may be a large unit of work involving the effort of a large group of individuals;

it may be a smaller unit occupying less time; or it may be a specific bit of work for an individual pupil.

The one essential of any project is that the person or persons engaged must be working whole-heartedly in an undertaking for which there has been purposeful planning. Of course there are varying degrees of educational values, and much difference of opinion exists among educators as to just what kind of projects are most worth while. A discussion of such values is not the purpose of this article, but rather to show how project-teaching may be used in teaching the required subjects in the curriculum with the largest gain to the child. If project-teaching means assisting pupils in the pursuit of purposeful activity, then more than one project can be pursued during the semester.

When the interest became increasingly evident in the exhibit, it was suggested that we show other activities of the school work besides that which was directly connected with our study of the orient. So a Nature and Hygiene booth was added in which were displayed:

1. A flower chart, recording name, color, date, and name of pupil bringing to school the first specimen.
2. Illustrations in water-color of spring flowers—pussy-willow, jonquil, tulip, iris, etc.
3. A bird chart, recording name, color, date, and name of pupil first reporting sight of bird.
4. A second bird chart, classifying the common birds according to size and color.
5. Birdhouses made by boys.
6. Charts illustrating flower and vegetable gardening by means of pictures collected by pupils.
7. Charts illustrating health habits, including oral hygiene, cleanliness, exercise, sleep with ventilation, etc.
8. Chart showing weekly record of hygiene habits of each pupil. A credit mark given for clean hands, face, nails, teeth, abstinence from coffee and tea, etc.
9. Weight chart, a record of each pupil's weight each month compared with the normal weight according to age and height as computed by United States Health Board.

Two adjoining rooms were appropriated in which to display the sewing and cooking of the sixth-grade girls. The sewing included samples of Red Cross work, aprons, dresses, and other garments which each of the best sewers had made for herself.

The second room represented a breakfast room, with a simple meal prepared and served without a maid. Here a family of six

was impersonated by members of the class and they excited much interest as they partook of the meal. The pupils were responsible for arrangement of room, for the cooking, and for the setting of the table.

As an arithmetic project the pupils had been much interested in the furnishing of an imaginary house. Both boys and girls had made booklets in which illustrations of furniture for each of four rooms were mounted. The solutions of problems which arose in connection with the project were mounted in the book, and also lists of spelling words, which were necessary in making orders, writing bills, receipts, etc. These booklets were displayed on tables provided in the exhibit room, as were also plans for a base-ball diamond and tennis-court, which motivated learning to draw to a scale.

The teaching of percentage was motivated by each pupil keeping his own daily record in the Studebaker Tests, which the pupils enjoyed as a daily drill in arithmetic. The weekly average was computed and each pupil made a graph showing his weekly progress. A class graph was also made by each pupil so that he was able to picture vividly his own rating as compared with the class. These graphs increased the interest in arithmetic and made an interesting showing at the exhibit.

As the result of more than one experience it is the opinion of the writer that teaching by means of real interest in a project, which is educationally worth while, is not a fad, but a real progress in experimental education worthy of being tried by those who are deeply interested in child welfare.

Educational Writings

I. PERIODICAL LITERATURE ON SUPERVISED STUDY DURING THE LAST FIVE YEARS

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INTRODUCTION

Increased interest in supervised study during the last five years has grown out of the fact that pupils in surprisingly large numbers are unable to secure satisfactory results during periods of independent study. Inasmuch as the efficiency of a school is measured to a very large extent by the progress of its pupils, it is a matter of first importance that pupils be taught to study independently and intelligently. The progress which has been made in this field has been reflected in periodical literature contributed largely by high-school principals. These discussions of supervised study have centered largely about the following phases of the problem: (1) the organization and administration of supervised study; (2) descriptions of particular plans in operation; (3) the technique of supervising study periods; and (4) the evaluation of the results of supervised study. This paper is concerned with a brief résumé of the significant articles which have been written and with the important tendencies which appear.

I. GENERAL EDUCATIONAL AND ADMINISTRATIVE PHASES

Needs for supervised study.—Principal G. W. Willett[1] has made a summary of the needs for supervised study as seen by various writers. In general, it is felt that the home is not as effective a place for study as the schoolroom, where better provision can be made for study conditions, including adequate equipment, regular study periods, and the guidance of individual differences among pupils. It is important that the conditions for effective study be made as favorable as possible. If traditional methods are inadequate, the school should not fail to give serious consideration to plans which promise more effective results.

Amount of time devoted to study.—Several writers have tried by means of student questionnaires to determine the amount of time spent in study by pupils at home and in school. Mr. F. M. Giles[2] found that 25 per cent of the students reporting had no definite time for study at home, while 50 per cent had no definite room. Mr. W. M. Proctor[3] had the pupils fill out schedules for school

[1] G. W. Willett, "Supervised Study in High Schools," *School Review*, XXVI (April, 1918), 259–72.

[2] F. M. Giles, "Investigation of Study Habits of High-School Students," *School Review*, XXII (1914), 478.

[3] W. M. Proctor (Stanford University), "Home- and School-Study Time of 1,661 Pacific Coast High-School Pupils," *School and Society*, VI, No. 151 (November 17, 1917), 596.

work and home study. Two types of schools were investigated: those having the assembly-hall plan of school study, and those having the double-period plan of supervised study. The average home-study time reported by the assembly-room group was 71 minutes per day and 54 minutes by the double-period group. The time devoted to study during school hours by the assembly-hall group was 86 minutes per day and 115 minutes by the supervised group. Thus the total time for the supervised group was 12 minutes per day longer than for the assembly group. On the basis of these results there seems to be little economy of time in supervised study in the schools in which these investigations were made. The important question which arises in this connection is, Was the quality of the work better in the case of the supervised study group?

Regarding the introduction and organization of supervised study Mr. C. Ross[1] suggests that the following are prerequisite to effective progress in supervised study: a 50- or 60-minute period, large study room, good equipment, and expert teachers. The divided-period plan is regarded as most desirable. This plan should be gradually introduced while the community is being convinced of its desirability. Mr. Ross recommends that pupils be divided into three groups of ability and given differentiated supervision. This plan has been tried by several schools. The University High School and Lewis Institute of Chicago have tried the experiment of dividing pupils into "slow," "medium," and "fast" sections, each advancing at its own rate. As yet no final quantitative results have been reported. This plan unquestionably enables teachers to adapt assignments and study problems to the respective needs of various pupils far better than does the usual plan of undifferentiated class organization.

Professor Hall-Quest[2] urges that supervised study be under the direction of the teacher of the particular subject supervised. This recommendation finds justification in the fact that each subject has special study-problems which should be seriously considered both by the teacher and the pupils. Again it is emphasized that the class hour be lengthened, and the divided-period plan be used. The longer school day will mean less home study. As before, the caution is made to introduce the plan gradually, and to prepare the community for it. Furthermore, teachers should study the psychology of the particular subjects supervised. Desirable books for such studies are Judd's *Psychology of High-School Subjects* and Freeman's *How Children Learn*.

Development of the supervised-study movement.—Excellent summaries of the development of the supervised study movements are to be found in the writings of Mr. E. R. Breslich,[3] Mr. C. Ross,[4] and Mr. G. W. Willett.[5] Mr. Ross mentions several books which are very influential in stimulating the directed study movements. These include McMurray's *How to Study*, Earhart's

[1] C. Ross, "The Problem of Supervised Study in the Grades," *Education*, XXXIX (April, 1919), 457–70.

[2] A. L. Hall-Quest, "How to Introduce Supervised Study," *School Review*, XXVI (May, 1918), 337–40.

[3] E. R. Breslich, *Thirteenth Yearbook of the National Society for the Study of Education*, Part I (1914), 32–72.

[4] C. Ross, "The Problem of Supervised Study in the Grades," *Education*, XXXIX (April, 1919), 457–70.

[5] G. W. Willett, "Supervised Study in High Schools," *School Review*, XXVI (April, 1918), 259–72.

Teaching Children How to Study, Sach's *American Secondary School*, and Hall-Quest's *Supervised Study*. At the present time there are about 25 books of this nature available. Mr. Breslich gives an excellent account of the historical development of the study movement, with a summary of the various plans that have been tried. The list is further supplemented by Mr. Willett and others. Some 15 plans have been described, but in recent years only a few have been emphasized.

Summary.—The literature shows that considerable importance is attached to the needs for supervised study. These needs are revealed through the experiences and opinions of various writers, or are brought out in student questionnaires. While the questionnaire method may be somewhat doubtful, it nevertheless indicates some of the possibilities in substituting school study for home study. The total time devoted to study by pupils is probably less than two hours daily, although the questionnaire method shows about two and three-quarters hours daily. In introducing supervised study, the lengthened, divided period is recommended. The gradual introduction of the plan and the stimulation of favorable public opinions are urged. Attempts to divide pupils into different groups of ability are attracting a large amount of attention and the results of these experiments will doubtless prove of great significance. Descriptions of the development and nature of study plans reveal the large influence exerted by certain books on teaching how to study.

II. ACCOUNT OF PLANS IN OPERATION

Classification of plans.—Of the many plans tried in the last few years, three are most prevalent at the present time. These are the double period, the divided period, and the hourly period coming daily or weekly. While the lines of distinction between these plans are not clearly marked, yet some such classification is convenient in discussing the large number of plans now in operation.

A. The double-period plan.—One of the very earliest double-period plans is that reported by Mr. J. S. Brown.[1] A 90-minute period, divided between recitation and study, was first tried in mathematics and languages and later extended to other subjects. It may be pointed out here that mathematics and languages appear to lend themselves most readily to supervised-study movements. The double-period plan described by Mr. A. C. Roberts,[2] consists of a 4-period day with 90-minute periods divided equally between study and recitation. Half of the students recite first and then study, while the other half study first and then recite. The present tendency in the double, as well as in the divided, period is to have the recitation come first. The plan has met with the general approval of the parents, and home study has been largely eliminated.

The laboratory-recitation plan discussed by Mr. I. M. Allen[3] is a variation of the double-period scheme. A 90-minute period is divided into two or three parts, according to the character of the work undertaken by the class. A laboratory teacher supervises the preparation of lessons, assignments for which appear in

[1] J. S. Brown, "Supervised Study in High Schools," *School and Home Education*, XXXIV (February, 1915), 207–12.

[2] A. C. Roberts, "Supervised Study in the Everett High School," *School Review*, XXIV (December, 1916), 735–45.

[3] I. M. Allen, "Experiments in Supervised Study," *School Review*, XXV (June, 1917), 398–411.

manuals. When sufficiently prepared, the pupils are taken from the laboratory teacher to the co-operating recitation teacher who conducts the lesson not only on the basis of the preparation which immediately preceded, but also upon work prepared several days earlier. It seems that several changes have recently been made in this plan, particularly in shortening the length of the period, to relieve the strain on teachers and pupils. Another variation of the double-period plan is found in the discussion by Mr. J. E. Erickson.[1] Here the school day was divided into five periods of 80 minutes each.

A tendency which is revealed in the articles just referred to, and which bears directly on the next plan to be discussed, is that of shortening the double period. In fact the double- and divided-period plans are not essentially different except for the time element. The fact that a 90-minute period sometimes proves too great a strain on pupils and teachers may account in part for the much greater popularity of the shorter divided-period plan. The strong points in favor of the double-period plan are that the pupils are given adequate time to prepare their work, can concentrate on a few subjects, and can cover the ground thoroughly. The disadvantages of the plan are that the 4-period day is hard to administer, and the long periods result in too much strain on teachers and pupils.

B. Divided-period plans.—In contrast with the relatively few cities having the double-period plan, we find a very large number having some form of the shorter divided period, usually 60 minutes in length. Mr. W. M. Proctor[2] found that 21 out of 31 western schools employed the 60-minute divided period while only one of the 10 remaining had a 90-minute period. Fifteen of the 20 cities had the 60-minute period divided into a recitation period of 40 minutes and a study period of 20 minutes. In the literature reviewed for this article, 22 cities, widely distributed over the country, used the 60-minute period, 5 employed the longer double period, while 3 had some form of the daily or weekly study hour. Of the 22 cities using the 60-minute period, 16 employed the 40-20 divisions. These findings show clearly that the 60-minute period with 40 minutes for recitation followed by 20 minutes of supervised study is by far the most prevalent plan.

In an account of a 60-minute divided-period plan, Mr. A. S. Martin[3] points out the necessity for a longer school day. A 6-period day according to the author "provides a school day long enough to do all the required work in school and eliminates the evil of home study." Failures were said to be reduced 50 per cent by the plan, higher marks were received throughout, school discipline was improved, and particular emphasis was made of the fact that the school buildings were used longer.

The plan described by Mr. T. R. Cole[4] consists of five instead of six 60-minute periods a day. Home study is not eliminated, but directed. Only 20 minutes of each period are devoted to supervised study. Two characteristics of

[1] J. E. Erickson, "The Results of Supervised Study in the Houghton, Michigan, High School," *School Review*, XXIV (December, 1916), 752–58.

[2] W. M. Proctor, "Supervised Study on the Pacific Coast," *School and Society*, VI, No. 142 (September 15, 1917), 326-28.

[3] A. S. Martin, "Long School Day and Directed Study," *Education*, XXXIX (November, 1918), 158–63.

[4] T. R. Cole, "One Year of Supervised Study," *School Review*, XXV (May, 1917), 331–36.

the supervision were: first, to find the source of the pupil's difficulty; and second, to guide him over it without giving too much assistance. Mr. Cole reported a 25 per cent increase in the number of subjects taken by pupils, improvement in the number of subjects passed, reduction in the number of failures, and a decrease in the cost.

In defense of the divided-period plan Mr. H. C. Hines[1] points out that it shortens the recitation without damage, and provides for study immediately before or after a recitation on the subject. An administrative advantage is that a 60-minute period interferes less with the usual program of studies than a longer period. Also wider differentiation is permitted, inasmuch as a 6-period day is more flexible than a 4- or 5-period day.

The chief objection offered to the 60-minute plan is that the time for both recitation and study is too short. Many pupils work slowly and can only get a good start on the study of the lesson in the time allotted. The result is that they have to take most of their work home in the form of "dabs" left over, which means longer study time in the end. Another disadvantage is that it too frequently degenerates into 60 minutes of recitation and no supervised study. Teachers not trained or particularly interested in the study problem are quite willing to use the whole period for recitation. The result is that the pupil's school-study time is consumed, and he must spend a proportionately greater amount of time in home preparation. This quite defeats the aim to eliminate much home study.

C. Hourly study periods.—Mr. G. L. Harris[2] gives a detailed account of the separate "study class" period as developed by Mr. Breslich in the University of Chicago High School. The study classes have a regular place on the school program, usually near the end of the day. Each department has a regular instructor in charge of the study class for that particular subject. A technique for study supervision is worked out by the teacher in co-operation with other members of the department. Study class records and exchange slips for transfer to other departments have been devised. The variety of pupils coming to the study class for one reason or another makes the function of the period chiefly a method of treating individual differences in pupils. Home study has been greatly reduced and general improvement shown in the class work. A plan somewhat similar to the above is the "deficiency period" described by Mr. C. H. Nielson.[3]

Mr. L. I. Loveland[4] gives an account of a supervised study hour at the end of the school day. Students making over 90 in their school work were dismissed before the final study period. This provision is based on the assumption that the pupil who gets high marks has learned how to study and needs no further help. This seems to be a dangerous assumption, but the exigencies arising in connection with supervised study in general have led teachers and principals to

[1] H. C. HINES (Iowa State University), "Supervised Study in the Junior High Schools," *School and Society*, VI, No. 149 (November 3, 1917).

[2] G. L. HARRIS, "Supervised Study in the University of Chicago High School," *School Review*, XXVI (September, 1918), 490–510.

[3] C. H. NIELSON, "An Innovation in Supervised Study" (Editorial Comment), *School Review*, XXV (March, 1917), 220.

[4] L. I. LOVELAND, "Supervised Study," *School Review*, XXIII (September, 1915), 489–90.

overemphasize the needs of the backward pupil and neglect the bright one. It needs no argument to show that high marks may be obtained although ineffective study methods are employed. The bright pupil ought to have the same opportunities for study-guidance that the poor student has. The business of making bright pupils brilliant is surely not less important than of making dull pupils passable.

Mr. A. W. Burr[1] believes that the difficulties and needs for better study may be best met, not by a great change in school conditions as they now are, but by the "use of the regular class period, sometimes for recitation and sometimes for study." A study card is recommended. This contains six points to be kept in mind by a pupil when studying his lesson. No records are to be taken during the supervised study. The pupil is to be put off his guard so that he will really reveal himself to the teacher. The advantages of this scheme are that it adds nothing but variety to the teacher's work, is a flexible plan, does not disturb the rest of the system, and surely is no greater expense. Mr. Burr outlines a fivefold program for preparing teachers to carry on supervised study. The chief points to be emphasized in teacher-training are: (1) careful introspection on the part of the teacher as to his own thought and study process; (2) an intimate study of the habits and interests of pupils; (3) a knowledge of psychology, general and applied; (4) a thorough knowledge of the best methods of study; (5) a clear understanding of the aim of each unit of work assigned.

Summary.—By way of general summary it may be pointed out again that the study plan receiving most attention in the literature at the present time is the 60-minute divided-period plan with 40 minutes for recitation and 20 minutes for study. While direct comparisons will not reveal any great superiority of the divided-period plan over the others described, it appears, nevertheless, that it has administrative advantages and imposes less strain than longer periods. The hourly and weekly periods are difficult to compare with the divided-period plan, but the success of the former has been so gratifying in some cases that the more complicated plans will have to justify their greater expenditure of time and energy in a very concrete way. Furthermore, the fact that these plans emphasize the importance of making detailed studies of the difficulties encountered by pupils is greatly to their credit.

While the total elimination of home study is advocated by some principals, and even accomplished, the general desirability of no home study has not yet been adequately demonstrated. Most successful teachers agree that some home study is necessary in order to have the school work effectively completed and to afford desirable occupation for pupils in the evening. The amount and nature of the home work best suited to pupils of the present day are problems that remain to be solved.

What actually goes on in the classroom during the "supervised study" period is rarely indicated in the plans discussed. We may infer from this that the technique of supervision is still in the formative stage and has hardly kept pace with the administrative phases of the study plans. The introduction of supervised study by subjects, however, has led to the development of some technique in particular subjects.

[1] A. W. Burr, "Directed Study," *School Review*, XXVII (February, 1919), 90–100.

III. SUPERVISED STUDY TECHNIQUE

Someone has suggested that it is impossible to teach anyone how to teach someone else how to study. However difficult this may be, it yet remains the most important task in the supervised study movement. It is generally agreed that the same teachers should conduct recitations and supervise the study period in their particular subjects. The reasons are obvious. Recitation and study are but two closely related phases of the same learning process, and intimate acquaintance with both is essential to the wise direction of either. If this be granted, the next problem that arises is the training of regular teachers for the expert supervision of study. In this connection several writers have indicated the need for either a general technique, applicable to all subjects, or a special technique for each subject.

Mr. E. D. Merriman[1] has outlined a general technique for supervised study applicable to any subject. General and specific suggestions are made in outline form. These provide for considerably more than the activities of study period alone. Helpful suggestions appear under the section "Individual Help and Guidance." The pupil is engaged in reading the text, memorizing material, or in various forms of activity necessary to master the assignment. The teacher is engaged in inspecting the individual work of the students and correcting or checking erroneous methods used by the pupils. Definite suggestions are made which might well serve as the basis for a more complete study technique for special subjects. Mr. Merriman advocates the distribution of general printed directions for efficient study and frequent discussions with the class regarding study technique. Another excellent contribution to the technique of supervised study appears in a brief worked out by Mr. G. W. Willett.[2] This brief gives many valuable suggestions to teachers new to supervised study.

Printed study helps or directions constitute a concrete device for aiding in supervised study. Mr. Giles[3] gives a list of nine "points" with some descriptive detail under each. Mr. Burr[4] advises the use of a study card with six suggestions for efficient study. The University of Chicago High School has a very good list of study helps of a similar character. These study directions are posted on the bulletin board, distributed among the students, and in some cases printed in the pupils' textbooks.

The printed manuals described by Mr. Allen[5] in connection with his laboratory technique are suggestive in devising a technique for different high-school subjects. Examples are given of the algebra and Latin manual. They contain directions, problems, and questions. At the time they are handed to the students provision is made for "auto-assignment" of lessons. Pupils are checked on the manual work before going into the recitation group.

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[1] E. D. MERRIMAN, "Technique of Supervised Study," *School Review*, XXVI (January, 1918), 35–38.

[2] G. W. WILLETT, "Supervised Study Technique," *Midland Schools*, March, 1918.

[3] F. M. GILES, "Investigation of Study Habits of High-School Students," *School Review*, XXII (April, 1914), 478.

[4] A. W. BURR, "Directed Study," *School Review*, XXVII (February, 1919), 90–100.

[5] I. M. ALLEN, "Experiments in Supervised Study," *School Review*, XXV (June, 1917), 398–411.

Technique for special subjects has been worked out by Mr. Breslich[1] in mathematics, by Miss Mabel Simpson[2] in eighth grade history, and Mr. G. E. Rickard[3] in high-school history. Miss Simpson presented a demonstration lesson in American history following the general plan of attack advocated by Professor Hall-Quest. Mr. Rickard worked out a detailed technique for testing the relative efficiency of class recitation and supervised study in history. Careful descriptions of classroom procedure were given for both recitation and study groups. By comparing supervised and unsupervised groups several valuable comparisons were brought out.

Summary.—The technique of directing the study habits of children does not appear to have progressed very far. General and specific recommendations with a few schemes for particular subjects constitute the chief written contributions. There is clear recognition of the fact, however, that supervised study means vastly more than merely observing pupils while they study or offering a few trite suggestions. The use of printed study helps distributed among the pupils appears to find wide favor. It is possible that special teachers can be trained to supervise study periods, but the recent tendencies to shorten the class period suggests that it has been found practicable to bring both recitation and study within the scope of the work of one teacher. In view of these tendencies the development of a study technique, which is available to teachers relatively untrained in supervised study, constitutes a very important problem.

IV. EVALUATION OF THE RESULTS

In evaluating the results of supervised study, mention has been made of student questionnaires now used rather extensively. It has also been indicated that the results have usually been expressed in terms of a reduced number of failures and an increase in high marks. These results are often based on the ordinary examination marks and class records, and do not take into account many variable factors involved. On the other hand, a few studies have been made of a somewhat exact quantitative character.

Dr. F. S. Breed[4] after summarizing the investigations of other recent writers outlined two plans by which the results of supervised study can be evaluated. The first plan provided for one teacher with two sections of equal size and ability (one supervised and one unsupervised). Half way through the course the groups were reversed. The second plan provided for two teachers, and, being more complicated, was not so generally chosen in the experiments. Tests were given at certain intervals of progress. The results of the investigation showed that "for whole classes, supervised study of the type tested was slightly less efficient in first-year algebra, was much less efficient in English composition, and was much more efficient in first-year Latin, than non-supervision." Poor pupils

[1] E. R. BRESLICH, *Thirteenth Yearbook of the National Society for the Study of Education*, Part I (1914), 32–72.

[2] MABEL SIMPSON, "The Divided-Period Plan of Supervised Study in American History," N. E. A. Report, 1919 (Chicago).

[3] G. E. RICKARD, *Some Aspects of Supervised Study*, Master's Thesis, University of Chicago.

[4] F. S. BREED, "Measured Results of Supervised Study," *School Review*, XXVII (March and April, 1919), 186-204; 262-84..

were helped, but good pupils were retarded. Dr. Breed recommends that divided- and double-period plans should not be urged for general adoption until their efficiency is more clearly demonstrated. The advocates of these plans will doubtless answer that technique of supervision may have been at fault. It seems clear that many more such studies are needed to locate the specific problems and help in their solution.

Earlier studies by Mr. E. R. Breslich[1] and Mr. J. H. Minnick[2] show that the supervised group in mathematics made better progress than the unsupervised group. Mr. Breslich found that the supervised group started in more slowly, but that it overtook and passed the other class. On the basis of his experiments he has successfully omitted much of the former home work in high-school mathematics.

On the basis of the quantitative results already obtained, there does not seem to be great superiority of supervised over non-supervised study. Under present conditions, reliable conclusions can only be based upon a large number of experiments conducted under strictly experimental conditions. For this purpose it is necessary to arrange for the proper selection of a control group, a standardized technique in both supervised and non-supervised groups, and a scientific method of testing, compiling, and interpreting the results of the investigation.

CONCLUSION

The foregoing review of the periodical literature on supervised study reveals clearly that considerable progress has been made. The relation of the supervised study period to the recitation has been quite definitely determined. The responsibility of the regular classroom teacher for the development of effective study habits on the part of pupils has been clearly recognized. A large amount of attention has been given to provision of study helps, daily programs, etc. The most urgent problem which presents itself for solution at this time is the development of a technique for improving the study habits of pupils. Before this problem can be adequately solved, teachers must analyze study problems in detail, they must test the accomplishments of pupils to find wherein the difficulties lie, and they must devise means for improving the results. It is encouraging to note that hundreds of progressive teachers are attacking these problems intelligently and persistently. Out of these investigations there are sure to develop many other constructive suggestions concerning the methods of improving the study habits of pupils.

II. COMMENT ON CURRENT EDUCATIONAL PUBLICATIONS

SOME RECENT BOOKS OF INTEREST TO TEACHERS OF HISTORY IN THE ELEMENTARY SCHOOL

Rand McNally and Company have recently published a textbook[3] in United States history for the upper elementary grades which should appeal to those

[1] E. R. BRESLICH, *Thirteenth Yearbook of the National Society for the Study of Education*, Part I (1914), 32-72.

[2] J. H. MINNICK, "An Experiment in the Supervised Study of Mathematics," *School Review*, XXI (December, 1913), 670-75.

[3] W. H. MACE and GEORGE PETRIE, *American School History*. Chicago: Rand McNally & Co., 1919. Pp. xcvii+470.

interested in up-to-date material in this field. The wide use of Mace's *School History of the United States*, published by the same company a number of years ago, convinced both the author and the publisher that a new book in the same field would be welcomed by those interested in a textbook in history for the upper elementary grades. It should be said at the outset that the new book is something more than a revision of the old one. The authors state in the preface that they have not hesitated to draw on the old book freely whenever a sentence in it, or a paragraph, or a word picture seemed to express an idea just as they wished it put. Some illustrations from the old book have been used in the new. In all other respects the book under review is a new one, and has many of the characteristics of a good textbook. The paragraphs are brief, the sentences short, and the language is simple. The general organization is a teachable one. The illustrations and maps are ample and well selected.

A recent publication which one must classify as a revision is Woodburn and Moran's after-the-war-edition of their *Elementary American History and Government*[1] first published in 1910. In the new edition the general organization of the field is the same as in the original one. The most notable changes in the present edition are found in the period since the Civil War. Nine chapters are devoted to this period in the work under review, whereas but three chapters are found in the earlier editions. Much of this new material deals with the World War and problems of reconstruction. Users of any one of the old editions of this book should not fail to secure a copy of the new one because of the abundance of up-to-date material it contains.

The Macmillan Company have recently added another history of the United States to their already large list.[2] *A History of the United States* by John P. O'Hara seems to have been written for Catholic schools, although this fact is not so stated in the preface. Other than giving especial attention to the early missionaries, the first half of this text differs very little from others published by this company. In the last half of the text one does not notice any particular emphasis to the work of the Catholics. The text as a whole is a conservative treatment of the traditional topics in American history. It contains little to justify its appearance in a field which is already crowded with material of the same or similar nature.

Suitable supplementary reading material in the field of elementary-grade history is by no means too plentiful. Up-to-date biographies interestingly written are always welcomed by grade teachers. *American Leaders, Book I*[3] is the first of two companion volumes which describe the lives of about forty national leaders living within the period of our history since about 1765. The volume under review contains interesting material relating to twenty leaders of national importance, beginning with Franklin and ending with Fremont. The treatment and style is adapted to Grade V. While not definitely so stated, it seems that the author expects Book I to be used in the first half of Grade V and Book II in the second half. It is to be hoped that the volumes will be so used, for they certainly contain much material of interest and value to children in these grades.

[1] J. A. Woodburn and T. F. Moran, *Elementary American History and Government*. New York: Longmans, Green & Co., 1919. Pp. li+517. $1.20.

[2] John P. O'Hara, *A History of the United States*. New York: Macmillan Co., 1919. Pp. xii+461.

[3] Walter Lefferts, *American Leaders, Book I*. Philadelphia: J. B. Lippincott Co., 1919. Pp. iv+329.

Great Deeds of Great Men[1] is a little book with a rather unique purpose. It is planned to give pupils in the intermediate grades an idea of how the world came to be known as it is today. To do this, the stories of the achievements of the world's greatest discoverers, explorers, and conquerors have been used. In all there are twenty-four of these stories—all well told. Darius, the King of the Wise Men, is the subject of the first story. Pericles, Alexander, Caesar, Alaric, Clovis, Charlemagne, Alfred, Columbus, Washington, Napoleon, Lincoln, and Peary along with a number of other world characters are also subjects for similar stories. Much use has been made of illustrations and maps throughout the book. The stories are interestingly and concretely told. They should appeal to children in the intermediate grades.

The history work in the first two grades quite generally centers around holiday celebrations. Suitable material for this work is in great demand. Primary teachers will welcome a recent book in this field.[2] In *History Stories for Primary Grades* one finds stories for the first grade, stories for the second grade, and stories for the third grade. The stories for each of these grades are intended for the use of the teacher and the parent in oral instruction. The writer knows of no better collection of similar material. The book should find an immediate place on the desk of primary teachers.

Authors of dramatic readers for the third and fourth grades are beginning to make use of historical material. *Little American History Plays for Little Americans*[3] is an example of this use. In all, this little book contains twenty-seven plays about real people—men, women, and children who did things which helped to make our country what it is today. It is the author's intention that the plays shall be acted in the schoolroom, for which purpose they are well adapted. In spite of the quality of material of this nature, however, the question always arises as to the advisability of placing ready-made plays in the hands of children when they themselves can make such good ones under the direction of a competent teacher.

Some years ago Lucy Fitch Perkins began her twin series. While these books are intended for supplementary reading material in geography, many of them have value to the history teacher as well. *The French Twins*[4] is the latest one of the series to appear. It is intended for Grade VII and contains material on the life and activities of the French in and near Rheims during the Great War. The story is very interestingly told. It depicts the necessary part played by women, children, and old people during the war. At a time when there is so much interest in France and the French, the book is sure to find a large audience.

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[1] Evie Corney and G. W. Dorland, *Greet Deeds of Great Men*. Boston: D. C. Heath & Co., 1919. Pp. vi+236.

[2] John W. Wayland, *History Stories for Primary Grades*. New York: Macmillan Co., 1919. Pp. ix+212.

[3] Eleanore Hubbard, *Little American History Plays for Little Americans*. Chicago: Benjamin H. Sanborn & Co., 1919. Pp. vii+182.

[4] Lucy Fitch Perkins, *The French Twins*. Boston: Houghton Mifflin Co., 1918. Pp. viii+202. $0.60.

A book on the use of mental tests.—Both group and individual mental tests are being used with increasing frequency to determine the abilities of school children. Their use in the quantitative study of individual differences has already given promise of great improvements in the classification of pupils, in the detection of specific disabilities or talent in school subjects, in the differentiation of courses of study, and in the improvement of marking systems and methods of promotion. The use of such tests has been hampered, however, by the fact that school children were not informed as to the methods and results obtained from using them.

During the past five years Professor Terman has contributed three very important publications on mental tests. He has standardized and adapted to our conditions, the Binet-Simon Intelligence Scale. He has described in great detail how to use and interpret this scale in a book called *The Measurement of Intelligence.* He has contributed to the scientific study of such problems through his technical description of the design of such a scale in the Stanford Revision of the Binet Scale.

He has just issued a new book[1] addressed to school teachers and administrators, which supplies new facts concerning the results of using the Stanford-Binet Scale with many thousands of school children. The book is first a very helpful summary and illuminating interpretation of such results. There are four chapters which deal with the amount and significance of individual differences in kindergarten children, children in the first grade, in the fifth grade, and in the first year of high school. Secondly, the book presents results and conclusions of far-reaching importance to school practice which have not hitherto been available. For example, it reports evidence which shows the constancy with which the mental status of a pupil is established throughout his school career; the intelligence quotient is shown to be constant through the grades. Important conclusions are developed concerning the mental status of retarded and accelerated children. He points to a new mode of thinking about such children by saying that pupils who are retarded on a basis of an age-grade classification are really accelerated on the basis of mental age classification. Similarly, pupils formerly grouped as "accelerates" are shown to be forced by our present methods of classification to study material which is one to three years below their actual mental level. In the same fashion he studies the problem of elimination of pupils from school and mental age. For the first time we have definite and conclusive evidence that "elimination is selective." Detailed analyses are reported with careful illustrative material of individual discrepancies between mental ages and teachers' ratings of their pupils. A very close agreement between standing in the test and standing in school subjects is revealed by the use of careful and well-supervised testing, such as has been carried on by Professor Terman and his students.

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[1] LEWIS M. TERMAN, *The Intelligence of School Children.* Boston: Houghton Mifflin Co., 1919. Pp. xx+317. $1.75.

A book on social games and group dances.[1]—This volume will be found useful by teachers who take an interest in playground activities, by workers in social centers, and by parents eager to know amusements other than ballroom dancing which children and young people will enjoy. The work is divided into three parts: (1) social games; (2) group dances; (3) singing games and dances especially adapted to children. Instead of consuming space with an abstract discussion of play and dancing, the authors give their attention almost wholly to concrete descriptions of a large number of games and group dances, all of which have stood the test of experience. The directions for conducting these amusements are stated so clearly that no one will have any difficulty in introducing them. The more complicated games and dances are explained with the aid of illustrations; in a few instances diagrams are also supplied.

In general, the games described are stirring in character and call for healthful forms of physical activity. The chapter on "Active Games of Tag" is especially good. A highly commendable feature of the book is the inclusion of piano scores with the group and children dances. The book has a brief bibliography of books and articles on dancing and singing games. Unfortunately it contains no index. Paper, binding, and print are of fair quality. The volume itself is a distinct contribution to its field.

H. C. HILL

III. CURRENT PUBLICATIONS RECEIVED DURING THE PAST MONTH

A. GENERAL EDUCATIONAL METHOD, HISTORY, THEORY, AND PRACTICE

French Educational Ideals of Today. Edited by Ferdinand Buisson and Frederic Ernest Farrington. Yonkers-on-Hudson, New York: World Book Co., 1919. Pp. xii+326. $2.25.

HUNTER, WALTER S. *General Psychology.* Chicago: University of Chicago Press, 1919. Pp. xiii+351. $2.15.

MARCH, NORAH H. *Towards Racial Health.* New York: E. P. Dutton & Co., 1919. Pp. xiii+320. $2.00.

NEWTON, A. W. *The English Elementary School.* New York: Longmans, Green & Co., 1919. Pp. viii+299. $2.00.

PARKER, SAMUEL CHESTER. *General Methods of Teaching in Elementary Schools.* Boston: Ginn & Co., 1919. Pp. xx+332. $1.60.

STARCH, DANIEL. *Educational Psychology.* New York: Macmillan Co., 1919. Pp. ix+473.

TERMAN, LEWIS M. *The Intelligence of School Children.* Boston: Houghton Mifflin Co., 1919. Pp. xxii+317. $1.75.

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[1] J. C. ELSOM and BLANCHE M. TRILLING, *Social Games and Group Dances*, with an introduction by M. V. O'Shea. Philadelphia: J. B. Lippincott Co., 1919. $1.75 net.

B. BOOKS PRIMARILY FOR ELEMENTARY-GRADE TEACHERS AND PUPILS

HAMILTON, SAMUEL. *Hamilton's Essentials of Arithmetic*, First Book. New York: American Book Co., 1919. Pp. 368. $0.52.

HAMILTON, SAMUEL. *Hamilton's Essentials of Arithmetic*, Second Book. New York: American Book Co., 1919. Pp. 432+xxvii. $0.68.

HIGGINS, JAMES. *Stories of Great Heroes.* New York: Macmillan Co., 1919. Pp. xv+142. $0.60.

KERN, O. J. *Outlines of Course of Instruction in Agricultural Nature Study for the Rural Schools of California.* Berkeley, California: College of Agriculture, University of California, 1919. Pp. 55.

KERN, O. J. *Outline Studies on the School Garden, Home Garden, and Vegetable Growing Projects.* Berkeley, California: College of Agriculture, University of California, 1919. Pp. 63.

LEWIS, HOMER P. *The A. B. C. Primer.* Philadelphia: J. B. Lippincott Co., 1910. Pp. 128. $0.50.

O'HARA, JOHN P. *A History of the United States.* New York: Macmillan Co., 1919. Pp. xii+461. $1.20.

C. BOOKS PRIMARILY FOR HIGH-SCHOOL TEACHERS AND PUPILS

CHAMBERLAIN, A. H., and J. F. *Thrift and Conservation.* Philadelphia: J. B. Lippincott Co., 1919. Pp. 272. $1.40.

CHANNING, EDWARD. *Students' History of the United States.* New York: Macmillan Co., 1919 (fourth revised edition). Pp. xxxi+627+xxix.

CHANNING, EDWARD. *The United States in the Great War.* Supplement to *Students' History of the United States.* New York: Macmillan Co., 1919. Pp. 599–627.

DAVIS, KARY CADMUS. *Horticulture.* Philadelphia: J. B. Lippincott Co., 1919. Pp. vi+416.

EWART, FRANK C. *Cuba Y Las Costumbres Cubanas.* Boston: Ginn & Co., 1919. Pp. xiv+157.

FOERSTER, NORMAN, and STEADMAN, J. M., JR. *Sentences and Thinking.* Boston: Houghton Mifflin Co., 1919. Pp. iv+121. $0.75.

FORD, WALTER BURTON, and AMMERMAN, CHARLES. *Teachers' Manual, First Course in Algebra.* New York: Macmillan Co., 1919. Pp. 341.

The Fundamentals of Citizenship. Reconstruction Pamphlets, No. 6, June, 1919. Washington, D.C.: Committee on Special War Activities, National Catholic War Council. Pp. 92.

GREENE, GEORGE G. *Exercises in Lettering—Slant Gothic.* Milwaukee, Wisconsin: Bruce Publishing Co., 1918. Pp. 31. $0.10.

GREENE, GEORGE G. *Exercises in Lettering—Vertical Gothic.* Milwaukee, Wisconsin: Bruce Publishing Co., 1919. Pp. 31. $0.10.

GRUENBERG, BENJAMIN C. *Elementary Biology.* Boston: Ginn & Co., 1919. Pp. x+528. $1.56.

JOHNSON, EMIL A. *Furniture Upholstery.* Peoria, Illinois: Manual Arts Press, 1919. Pp. 64. $1.00.

JONES, H. S. V. *Words and Sentences.* New York: Henry Holt & Co., 1919. Pp. iii+150.

LAING, GRAHAM A. *An Introduction to Economics.* New York: Gregg Publishing Co., 1919. Pp. xi+454.

LIPPS, OSCAR H. *Daily Lesson Plan Book for Vocational Instructors.* Milwaukee, Wisconsin: Bruce Publishing Co., 1919. $0.80.

A Program for Citizenship. Reconstruction Pamphlets, No. 5, July, 1919. Washington, D. C.: Committee on Special War Activities, National Catholic War Council. Pp. 14.

QUINTERO, S., and J. ALVAREZ. *La Muela del Rey Farfán.* Edited by Aurelio M. Espinosa. Yonkers-on-Hudson, New York: World Book Co., 1919. Pp. xii+93. $0.60.

RIVAROL, ANTOINE. *De l'Universalite de la Langue Francaise.* Edited by W. W. Comfort. Boston: Ginn & Co., 1919. Pp. vi+62. $0.50.

SEAMAN, GEORGE W. *Progressive Steps in Architectural Drawing.* Peoria, Illinois: Manual Arts Press, 1919. Pp. 63. $1.25.

D. PUBLICATIONS OF THE UNITED STATES BUREAU OF EDUCATION AND SIMILAR MATERIAL IN PAMPHLET FORM

Recent issues of the Bureau of Education:

Bulletin No. 8, 1919—*Life of Henry Barnard.*

Bulletin No. 36, 1919—*Education in Italy.*

Bulletin No. 38, 1919—*Education in Switzerland, 1916–1918.*

Bulletin No. 41, 1919—*An Educational Study of Alabama.*

Bulletin No. 42, 1919—*Monthly Record of Current Educational Publications.*

Nineteenth Annual Report of the Director of Education. Manila, Philippine Islands: Bureau of Education, 1919. Pp. 195.

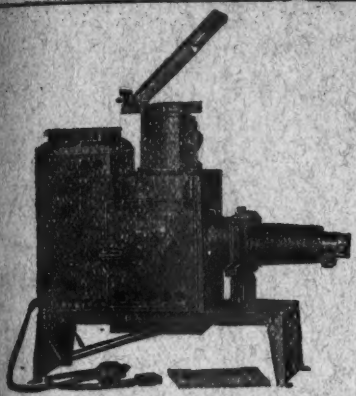
E. MISCELLANEOUS PUBLICATIONS

BETTS, GEORGE HERBERT. *How to Teach Religion.* New York: Abingdon Press, 1919. Pp. 223. $1.00, postage extra.

GENUNG, JOHN FRANKLIN. *A Guidebook to the Biblical Literature.* Boston: Ginn & Co., 1919. Pp. xv+686. $2.50.

HILL, JOHN G. *The Prophets in the Light of Today.* New York: Abingdon Press, 1919. $1.25.

The League of Nations. Edited by Stephen Pierce Duggan. Boston: Atlantic Monthly Press, 1919. Pp. xv+357. $2.50.



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